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INDIA RUBBER WORLD

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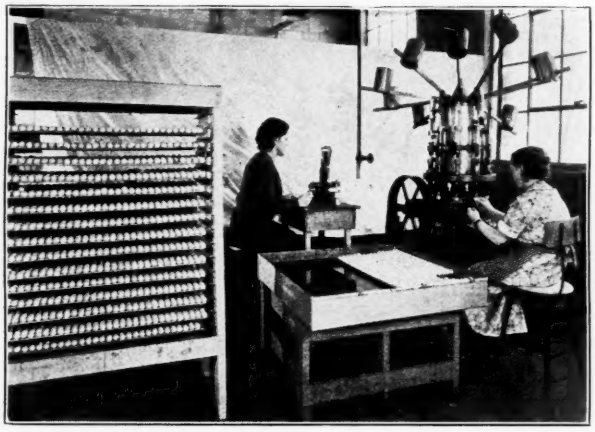


The Hagen Golf Ball Is Built around a Core Consisting of a Rubber Sac Filled with Pure Honey by Means of the Above Machine

The Modern Golf Ball

E. E. Chapman [1]

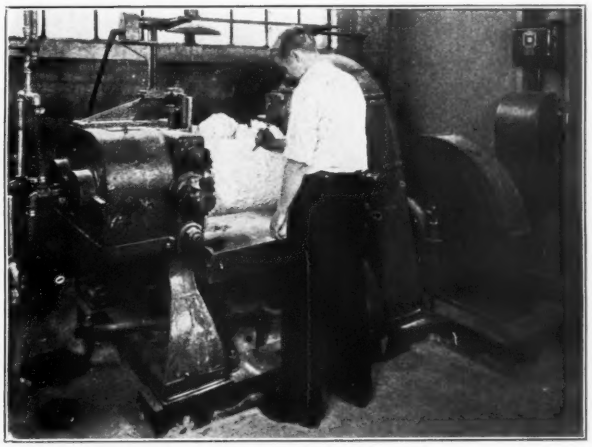
THE Scotch game of golf in all probability originated not in Scotland, as generally believed, but in Holland. A picture in "The Book of Hours," made at Bruges at the beginning of the sixteenth century, shows three players, each with a single golf club, the head of which is apparently steel or iron. The golf ball is covered with leather. Most other early Dutch pictures show the game being played on the ice, the putting being at a stake, but in this picture the players are putting at a hole in the turf, as in our modern game. It is uncertain at what date the game was introduced into Scotland, but by 1457 the popularity of the game had so obscured the more important pursuit of archery that the Scottish parliament in that year ordained that "the futeball and golf be utterly cryit doun, and nocht usit." Other acts were passed at later dates against the playing of golf, but to no avail. James IV of Scotland set forth an edict against the game, but soon disobeyed it himself, as shown by various entries in the accounts of the lord high treasurer of Scotland early in the sixteenth century anent this "unprofitabill sportis" of the King.

Early Balls of Weird Types

The earliest golf balls apparently were made of leather, stuffed with feathers. These were followed by balls of gutta percha, which in turn were replaced by the American invented rubber-cored balls which began to appear in 1898. The superiority of the latter lay principally in their greater resiliency, making them go much more lightly off the club and, therefore, capable of far greater distance. Then, too, the rubber-cored balls did not show so obviously marks of ill usage with the club.

Various methods of making golf balls have been used, the principal efforts being aimed at the production of a ball that will drive easily, will have a long, straight carry, and will stand up under abuse. Numerous types of ball centers are being used today in an attempt to produce a

[1] Vice president, L. A. Young Golf Co., 6545 St. Antoine St., Detroit, Mich.



Tough Cover Material Is Prepared by Mixing Balata, Rubber, and Certain Compounding Materials on the Steamheated Rolls of This Mill

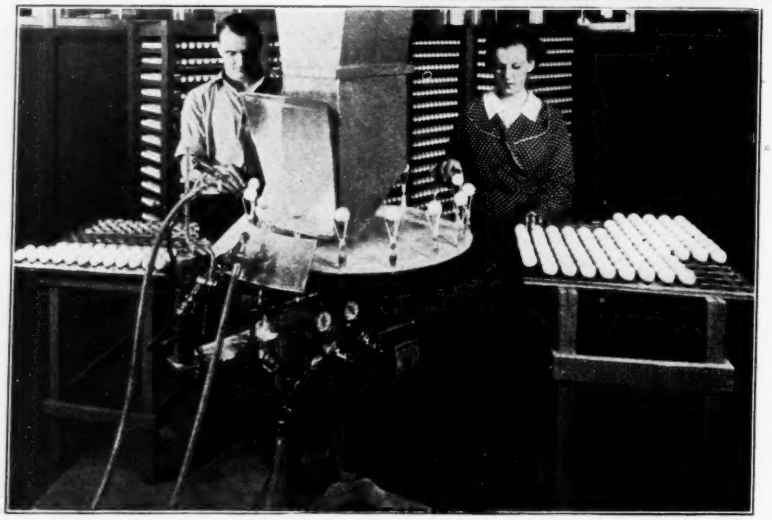
These Automatic Machines Wind Rubber Thread about the Core with Uniform Tension to Exacting Dimension and Weight Specifications

ball that will meet the demands of the most severe critic. Unique among these, as well as one of the most popular among the players, is the Hagen Honey Center golf ball.

The plant in which these balls are manufactured is housed in a modern fireproof building with ample light and ventilation. Most of the equipment used in the manufacturing processes is new and of special design to obtain the utmost precision in the finished product. The cycle of construction takes about fifteen days. This length of time is necessary for proper curing of the balls between operations.

Honey-Filled Cores

The golf ball starts as a small spherical sac, made of a special rubber compound with particular qualities of resiliency and toughness. These sacs are placed in a filling machine, where pure Tupelo honey is forced under pressure through specially designed hypodermic needles into ten sacs simultaneously. The honey is maintained at a constant temperature of 140° F. in a chamber in the center of the filling machine, by means of a thermostatic control. This temperature must be constant in order that each sac will receive exactly the same amount of honey, which is checked by weighing the sacs after filling. As an illustration of the care taken in the process, the allowable tolerance in weight of the filled centers is only one one-hundredth of an ounce. A patch is cemented over the hole made by the needle.



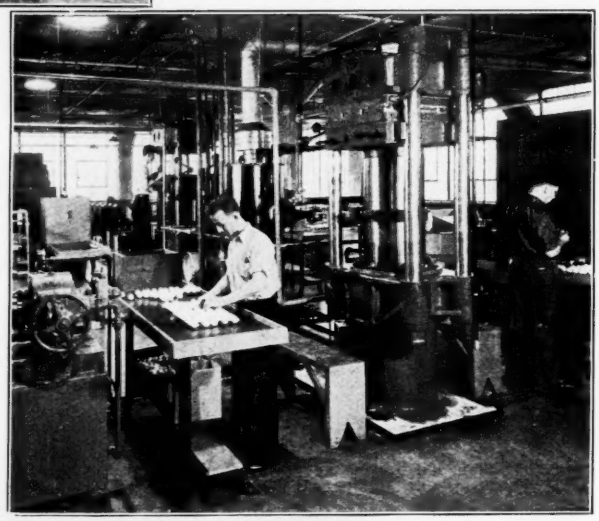
Tough, Brilliant, Specially Developed Enamel Is Applied to the Exterior of the Ball by These Spraying and Drying Machines

Rubber Thread Winding

Eight of these filled centers are wound with rubber thread simultaneously on specially constructed winding machines. The thread must be applied with a maximum of tension if the finished golf ball is to have plenty of distance and accuracy. In all Hagen golf balls the thread is made of pure Para rubber, which will stretch to more than eight times its original length without breaking. Nearly one hundred feet of this thread is required for each ball. The wound cores are now ready for the covers.

Cover Material Preparation

Golf ball covers are of a compound consisting largely of balata, a gum material somewhat similar to rubber, but with different properties. Balata is obtained from the latex or milky juice of the bullet tree, a native of South America and the West Indies. To this raw balata are added definite quantities of pure rubber and other ingredients needed to obtain the qualities desired in a tough, resilient cover. The balata mixture is run through steamheated rollers which squeeze and knead it thoroughly until all the material is a homogeneous mass. This is then rolled out into a large white sheet, which, when cooled, goes to a stamping press, where it is converted into 1⅛-inch squares which have a thickness of $^{9}/_{32}$-inch.



These 200-Ton Hydraulic Presses Form the Covering Material and Vulcanize It under Carefully Controlled Temperature Conditions

Cupping and Covering

The squares of balata compound are now heated and

placed in the molds of a large press. The platens of this press contain 100 molds of high-grade hardened steel. Under a pressure of 200 tons, each square is formed into a cup-like shell to make one-half a golf ball cover. Each wound core is placed between two of the cover halves formed in the preceding operation, and the assemblies are placed in the dies of a molding machine. This machine has a capacity of 200 assemblies at each impression, each of the 400 steel die halves being carefully made in a special shop which is particularly noted for accurate tool work.

Cover Vulcanizing

Again under 200 tons' pressure and carefully regulated mold temperature the two halves of the cover are molded around the core and vulcanized, to form the rough-finished golf ball, with the characteristic dimples on its surface. The mold dimensions are held within five one-thousandths of an inch variation, and control of temperature during the cover making and the final molding is all-important. The platens on both presses are equipped with temperature control mechanisms, which operate regulating valves in the steam supply lines to each press. This method of control, in addition to the pressure regulator on the boiler itself, insures hairline control of temperature.

The rough golf balls are taken from the molding press to a refrigerator room, where they are cooled to about 35° F. The flash around the seam of the cover is then removed on an emery wheel, and the balls are weighed and inspected individually; then they are ready for painting.

Painting

The painting operation is done on an automatic spraying machine. The balls are placed between the three prongs of holders which revolve in front of the compressed-air spray guns. Two guns are used, one automatically spraying the ball from above and the other from below, as the rotating table brings each ball to the correct position. Three coats of enamel are applied; at least 48 hours should elapse between each painting.

The paint used is a special enamel compounded for use on golf ball covers. Such an enamel must have a fine gloss, must be weatherproof, and at the same time must be extremely tough to withstand the hardest usage. Years of trial and experimentation have led to the production of an enamel that can be depended upon to stand up under the constant battering it will receive on the golf course.

Insignia Application

After the final painting the golf ball is stamped with the name, the honey-bee trade mark, the number or multi-dotting, or whatever other insignia goes on it. These impressions are filled in with colored enamel. After inspection the balls are wrapped in wax paper, placed in three-ball cartons, and finally into dozen-size containers, ready for action.

The standard size for golf balls, as specified by the United States Golf Association, requires that each ball must not be less than 1.68 inches in diameter or more than 1.62 ounces in weight, and it is essential that the balls be held absolutely to the minimum size and maximum weight.

Rubber Aging Apparatus

AN APPARATUS for studying the aging of rubber is indicated here diagrammatically. Paul Walter, its originator, claims it to be the only device which permits artificial aging under the influence of oxidation by air, as well as under the influence of temperature, light, and humidity.[1]

The apparatus comprises an iron high pressure test chamber, 1, provided with a screwed on cover, 2. Accessory to this chamber are a pressure gage, 3, safety valve, 4, thermometer sheath, 5, eye piece, 6, filling valve for admission of water, 7, thermostat, 8, and rheostat, 9. Below the iron container or furnace is an electric heating element, 10. Central within the container is the test sample holder, 11. Immediately below is a quartz lamp, 12. This very special lamp is a high tension burner, 3,000 volts under 50 milliamperes, constructed to resist a pressure of 50 kilograms. The appliance is electrically heated by a nichrome transformer, 13. The heating element, 10, is automatically controlled by the thermostat, 8, which is sensitive to about 0.5° C. All temperatures from 30 to 140° C. (86 to 284° F.) can be easily read on the graduated indicator and verified by a glass thermometer set in the sheath, 5.

Placing the sample for test takes but a few minutes. The apparatus is very simple and entirely automatic, and the test results obtained are said to correspond with natural aging.

[1] *Rev. gén. caoutchouc*, Sept., 1935, pp. 14-16.

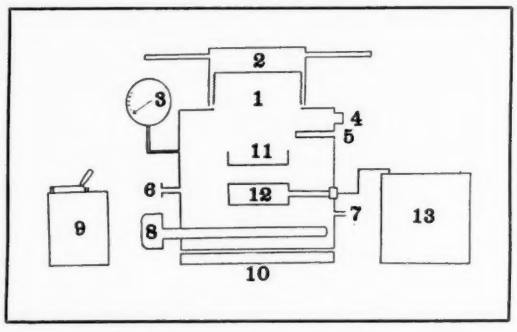
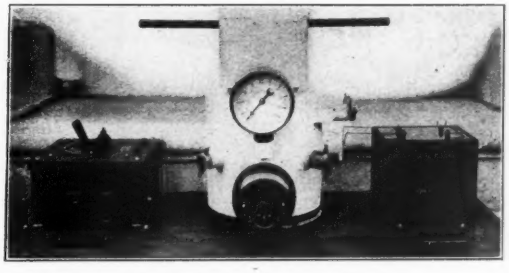


Diagram of the Aging Device



Walter Aging Apparatus

Synthetic Rubber

Joseph Rossman, Ph.D.

THE following abstracts of United States patents dealing with synthetic rubber continue the informative article from the July 1, 1936, issue of INDIA RUBBER WORLD.

71. Luther and Heuck, 1,864,078, June 21, 1932. The process for producing stable substances of latex character comprises emulsifying diolefines in aqueous media with emulsifying agents having a soap-like character and polymerizing the emulsified materials in the presence of buffer systems.

Example 1: 100 parts of isoprene are emulsified in 400 parts of water, with the addition of ten parts of ammonium oleate, three parts of tertiary sodium phosphate, and two parts of secondary sodium phosphate, for example, in a so-called turbo mixer or apparatus with similar action, and are then warmed at from 60 to 80° C. in a pressure apparatus for three weeks. By then the greater part of the isoprene will have been polymerized, and a product of latex character formed. The rubber is now coagulated from this artificial latex by the addition of acids, as acetic acid, hydrochloric acid, and the like, or also by the addition of acid buffer systems with a hydrogen-ion concentration of pH about 3 to 4. The resulting artificial rubber can be further treated by rolling, drying, vulcanizing, etc.

Example 2: 200 parts of isoprene are emulsified in 800 parts of water, with the addition of five parts of sodium oleate, ten parts of the sodium salt of an isobutylated naphthalene-sulphonic acid, ten parts of glue, and two parts of secondary sodium phosphate, and maintained at from 80 to 90° C. in a pressure vessel fourteen days. An artificial latex is obtained from which the artificial rubber can be recovered by the further treatment described in Example 1.

72. Schwerdtel, 1,879,543, Sept. 27, 1932. The process comprises coagulating a latex-like emulsion obtained by the polymerization in emulsion of butadiene-1,3 by adding thereto an alkali metal salt.

Example 1: 100 parts by weight of latex, produced by the polymerization of butadiene-1,3 in emulsion by means of a 10% sodium oleate solution and containing 24 parts by weight of polymerization product, are coagulated immediately and completely by adding five parts by weight of a saturated sodium chloride solution. An analogous latex containing 15 parts by weight of polymerization product requires for coagulation 12 parts by weight of a saturated sodium chloride solution.

Example 2: 100 parts by weight of latex, produced by the polymerization of 2,3-dimethylbutadiene-1,3 in emulsion by means of a 10% sodium oleate solution and containing 30 parts by weight of polymerization product, are coagulated immediately and completely by adding 15 parts by weight of a saturated sodium acetate solution.

73. Ebert, Fries, and Garbsch, 1,880,918, Oct. 4, 1932. Eight hundred parts of butadiene plus 16 parts of dioxane and in the presence of 3.2 parts of sodium in the form of small balls about 1.1 millimeters across are polymerized at about 40° C. in an iron autoclave kept rolling. The polymerization proceeds quietly and uniformly, is completed in from one day to 2½ days, and yields a uniform product, in which the single particles of sodium, which have served as the starting point of the polymerization, are uniformly dispersed.

74. Schmidt, Niemann, and Meyer, 1,882,976, Oct. 18, 1932. Example 1: a 5% solution in benzene of a polymerization product prepared from butadiene by means of sodium is applied to a clean metallic surface; the benzene then is allowed to evaporate. The film remaining on the foundation is exposed to the vapor of sulphur monochloride or dipped into a 0.5% solution of the chloride. On heating the film at 180° C. for an hour, air being excluded, an almost colorless coating is obtained which adheres firmly to the base and is distinguished by great hardness and resistance to heat and chemical agents.

Example 2: a mixture of 100 parts of a polymerization product prepared from butadiene by means of sodium, two parts of sulphur, and one part of diphenylguanidine, is heated at 250° C. three hours. A product resembling hard rubber results.

75. Zutphen. 1,885,653, Nov. 1, 1932. One and five-tenths parts of sodium in the form of wire or ribbon and 60 parts of dry sodium chloride are treated in a ball mill in an atmosphere of nitrogen until a homogeneous, finely powdered mixture is produced, which is heated to 35 to 40° C. in a pressure vessel together with 240 to 270 parts of butadiene until the latter disappears. The product is worked up in such a manner that the caoutchouc formed is separated from the salt mass containing sodium, this operation being easy; to remove the sodium which possibly might adhere to the caoutchouc the latter is treated with alcohol and then with water.

76. Patrick, 1,890,191, Dec. 6, 1932. Seven hundred and fifty grams of hydrated sodium sulphide ($Na_2S.9H_20$) are dissolved in approximately a liter of water, and the solution is boiled with 300 grams of sulphur to produce a solution of polysulphide. Water is added to make the specific gravity at 70° C. approximately that of ethylene dichloride producing about 1,200 to 1,300 cubic centimeters of solution. About 300 cubic centimeters of ethylene dichloride are added, and the mixture is gradually heated to about 70° C., preferably in a vessel having a reflux condenser. The reaction proceeds rapidly and is completed after digesting for an hour or more at such a temperature that active refluxing of the ethylene dichloride and steam occurs. The mixture is then cooled, and the liquid portion drawn off, leaving a yellow plastic. This is boiled with water to drive off occluded volatile compounds and to extract soluble salts; the boiling preferably is repeated several times, and the plastic is comminuted between boilings. The purified plastic is substantially free from halogen, is of high coherence, resiliency, and pliability, and has elasticity somewhat similar to that of soft rubber. It is only slightly soluble in most ordinary organic solvents, although somewhat swollen by carbon disulphide.

It can be worked, molded, and rolled into sheets at temperatures around 130 to 140° C.

77. Ambros, Reindel, Eisele, and Stoehrel, 1,891,203, Dec. 13, 1932. The process for the polymerization of polymerizable unsaturated liquid organic compounds comprises incorporating the compounds with a small quantity of a carbonyl of a heavy metal.

Example 1: 100 kilograms of purified linseed oil having the following characteristics: iodine value 180, acid value 5, saponification value 190, viscosity at 20° C., 7° Engler, are well mixed with one liter of iron carbonyl. When the mixture is gradually heated to 300° C. with the simultaneous introduction of carbon dioxide, the viscosity of the linseed oil increases rapidly with the decomposition of the iron carbonyl. The polymerization is completed after four to five hours, and the characteristics of the product obtained are: iodine value 120, acid value 15, saponification value 190, and viscosity at 50° C. from 800 to 1,000° Engler. After heating for a further hour or two at 300° C. the polymerization product is converted into an elastic product.

Example 2: 100 parts by weight of linseed oil having the following characteristics: iodine value 180, acid value 5, saponification value 190, viscosity at 20° C., 7° Engler, are incorporated with 0.35-part by weight of cobalt carbonyl. The mixture is then gradually heated to about 300° C. while passing through carbon dioxide. After five hours jelly results.

78. Bruson, 1,892,101, Dec. 27, 1932. A process of treating polymerizable unsaturated organic compounds comprises heating them to reaction temperature with an aryl diazonium fluoborate.

Example: isoprene is heated under reflux with an equal volume of toluene and 15% by weight of phenyl diazonium fluoborate for about one-half hour. When the solution is poured into a large volume of alcohol, a white powdery polymer of isoprene is obtained.

79. Luther and Heuck, 1,896,491, Feb. 7, 1933. A process for producing substances of the nature of latex comprises emulsifying diolefines in water by separately dissolving constituent substances, which, when placed in mutual contact, react to form emulsifying agents in diolefines and water and mixing the solutions thus obtained and polymerizing in the presence of an oxidizing agent and a buffer system.

Example 1: five parts of benzoyl peroxide, 0.5-part of cobalt oleate, 12.6 parts of olein, four parts of piperidine piperidyl-dithiocarbamate, and ten parts of linseed oil are dissolved in 400 parts of β-methylbutadiene, and an emulsion is then prepared by agitation with a solution of ten parts of trisodium phosphate in 500 parts of 0.5% ammonia, which also contains 25 parts of a 5% solution of glue and five parts of a 10% solution of hydrogen peroxide. On moderate heating or by allowing the solution to stand at room temperature, a liquid similar to latex is obtained, which furnishes, on coagulation in any known manner, a product which is found to resemble rubber.

Example 2: a mixture of 400 parts by volume of β-methylbutadiene, 15 parts of ammonium oleate, ten parts of trisodium phosphate, five parts by volume of a 30% solution of hydrogen peroxide, 25 parts by volume of a 5% solution of glue, and 500 parts by volume of water is first emulsified in an agitator at ordinary temperature. After standing for about 190 hours at room temperature, a viscous, perfectly homogeneous liquid, similar to latex, will have formed, which, on coagulation with acetic acid, furnishes a precipitate of a mass resembling rubber.

80. Meis, Klein, and Tschunkur, 1,896,493, Feb. 7, 1933. To manufacture artificial rubber-like masses treat a diolefine hydrocarbon with a finely divided heavy metal oxide in aqueous suspension.

Example 1: 100 kilograms of butadiene are shaken into a pressure resisting shaking vessel with about 100 liters of a 1% aqueous colloidal solution of manganese dioxide at about 60° C. until polymerization is complete. The erythrene rubber thus obtained is rolled into sheets on a rolling machine, mixed with sulphur, and vulcanized in the known manner. The vulcanization products are distinguished by high elasticity and strength.

Example 2: 100 kilograms of isoprene are treated with a solution of 0.1-kilogram of colloidal manganese dioxide and 2.5 kilograms of egg albumen in 100 liters of water in a shaking apparatus, as mentioned in Example 1, at 60° C. for several days. The polymerization is then complete. Reaction products of low molecular weight are not formed.

Example 3: 100 kilograms of butadiene are heated at 60° C. in a shaking autoclave with 100 liters of a 10% colloidal aqueous solution of manganese dioxide with the addition of 10 kilograms of soap until polymerization is complete.

81. Bock and Tschunkur, 1,898,522, Feb. 21, 1933. This process comprises polymerizing a hydrocarbon of the butadiene series in emulsion with water and an agent possessing emulsifying properties, in the presence of a chlorinated aliphatic compound containing at least two chlorine atoms attached to one and the same carbon atom.

Example 1: 150 kilograms of butadiene and 15 kilograms of hexachloroethane (Cl_3C-CCl_3) are emulsified with a solution of 15 kilograms of sodium stearate in 150 kilograms of water and polymerized at ordinary or slightly increased temperature for five days. After the addition of acetone a substantially quantitative yield of a polymerization product is obtained, differing in its properties from normal butadiene rubber, and which, when rolled out into plates, is transparent in thin layers, has a gutta-percha-like appearance, and can be kneaded like paraffin wax. Without the hexachloroethane the yield under the above working conditions amounts to only about 45% of rubber and cannot be essentially increased even by prolonging the duration of the polymerization process.

Example 2: 150 kilograms of butadiene and 1.5 kilograms of dichloro malonic acid are polymerized in emulsion with a solution of seven kilograms of saponine in 150 kilograms of water at about 55° C. After five to six days a yield of about 80% of a polymerization product is obtained; while without the addition of chlorine compounds the yield under the above conditions amounts to only about 45%. When trichloroacetic acid is used instead of the above chlorine compounds, the yield is increased to about 90%.

Example 3: 100 kilograms of butadiene and ten kilograms of carbon tetrachloride are polymerized at about 60° C. in emulsion with a solution of ten kilograms of saponine in 100 kilograms of water. After about four days the yield of polymerization product amounts to 75%; while without the carbon tetrachloride scarcely any such rubber formation takes place within the four days.

82. Schmidt, 1,901,045, Mar. 14, 1933. To produce thin artificial masses warm a soft foil of a non-distillable synthetic polymerization product of a diolefine free from sulphur in the presence of oxygen.

Example: a 3% solution in cyclohexane of a polymerization product obtainable from butadiene by means

of sodium is poured on to a horizontal glass plate. The film obtained after the cyclohexane evaporates is heated in the air at from 40 to 50° C. until a satisfactory hardness is attained, and then is allowed to stand in the air for a long time. The film, originally very extensible, has completely lost its extensibility, but remains glass clear, transparent, and flexible and has considerable tensile strength.

83. Meisenburg, 1,901,354, Mar. 14, 1933. Example 1: 8.3 parts by weight of butadiene-1,3 and 2.52 parts by weight of methyl-methylene-ethylketone are agitated at 60° C. for several days with eight parts by weight of a 3% aqueous solution of the hydrochloride of diethylamino-ethoxyoleyl-anilide. A polymerization product is obtained in a quantitative yield, which becomes soft and plastic on the rollers.

Example 2: 8.5 parts by weight of butadiene-1,3, 2.52 parts by weight of methyl-methylene-ethylketone, and 0.21-part by weight of magnesium oleate are agitated at 60° C. for several days with seven parts by weight of a 10% aqueous solution of sodium oleate.

Example 3: 5.75 parts by weight of butadiene-1,3 and 2.21 parts by weight of benzal-acetone are agitated at 60° C. for several days with seven parts by weight of an aqueous solution of the hydrochloride of diethylamino-ethoxyoleyl-anilide of 3% strength. The polymerization product readily takes up fillers on the rollers and can be vulcanized to soft or hard rubber-like products.

Example 4: seven parts by weight of butadiene-1,3, 2.5 parts by weight of benzal-acetone, and 0.5-part by weight of methyl-methylene-ethylketone are agitated at 60° C. for several days with seven parts by weight of a 3% aqueous solution of diethylamino-ethoxyoleyl-anilide.

84. Calcott, Downing, and Powers, 1,903,500, Apr. 11, 1933. To make a latex-like liquid prepare an aqueous emulsion of a polymerizable hydrocarbon, the emulsion containing a resinous constituent.

Example: to 100 parts of divinylacetylene obtained by the polymerization of acetylene are added 200 parts of water, two parts of naphthenic acid sodium salts, and one part gelatin. The mixture is agitated violently until microscopic examination reveals the average particle size is one micron and that disproportionably large or small particles are chiefly absent. With this emulsion is then mixed one part of guayule resin in the form of an aqueous suspension. The mixture is allowed to stand seven days at room temperature (25° C.) to polymerize; then one part of *Hevea* latex is added which is thoroughly incorporated by gentle agitation. Next is added 0.2-part of hydroquinone in the form of an aqueous solution. The mixture is then coagulated by adding sufficient 2% acetic acid to change the pH of the solution to approximately 4. The coagulum thus obtained is freed from water by milling and is ready for use as raw rubber.

85. Keller, 1,906,229, May 2, 1933. A process comprises heating a halogenated higher fatty acid containing 16 to 18 carbon atoms and at least four halogen atoms under elevated pressure with a solution of a weakly alkaline acting agent.

Example: 40 parts of a tetrachloropalmitic acid are heated in an autoclave with 46 parts of an aqueous solution of ammonia (0.909 specific gravity), diluted with 20 parts of water, some hours at 140 to 150° C. When cooled down, the reaction product is isolated by filtration, water washed, and dried. The new product represents a yellowish, tenacious, elastic substance, insoluble in water, dilute acids, alkalies, and organic solvents, and may be purified by extraction with, for instance, boiling chloroform or alcohol.

86. Maximoff, 1,910,846, May 23, 1933. A process for preparing emulsions of synthetic rubber comprises forming an aqueous emulsion of a diene and a water-soluble soap, allowing the diene to polymerize, separating the unpolymerized diene from the emulsion, and recovering a synthetic rubber latex.

Example: 100 parts of dimethyl-erythrene and 8.7 parts by weight of oleic acid are emulsified in 350 parts by volume of 10% ammonium hydroxide. To this emulsion are added 18 parts by volume of a 3% hydrogen peroxide. The emulsion then stands at room temperature about eight days. Unpolymerized dimethyl-erythrene may be removed by heating the emulsion to the boiling point of dimethyl-erythrene. The remaining emulsion comprises a synthetic rubber latex, in that it is a latex containing synthetic rubber in emulsified form. It may be coagulated by adding acetic acid or most of the other known coagulants for ordinary rubber latex.

87. Maximoff, 1,910,847, May 23, 1933. Ordinary rubber, such as crepe, is softened with dimethyl-erythrene and then emulsified in water containing a polymerizing agent, as ammonium oleate, and, if desired, an accelerator of polymerization. This emulsion, wherein the rubber and the erythrene are discontinuous phases, when allowed to stand for a few days at room temperature, will comprise an artificial latex containing synthetic rubber. If erythrene be used in place of dimethyl-erythrene, the emulsification and polymerization may be carried out under pressure. Either vulcanized or reclaimed rubber may be used instead of crude.

In place of erythrene, its homologues, as isoprene, piperylene, phenyl-butadiene, and also styrol, etc., may be employed. The homologues of erythrene include acyl aryl and heterocyclic substitutions. By changing the proportions of catalyst and by using different accelerators of polymerization, various properties of synthetic rubber latex may be obtained. It is possible by this means to obtain a latex which will yield a very sticky rubber, suitable for adhesive purposes.

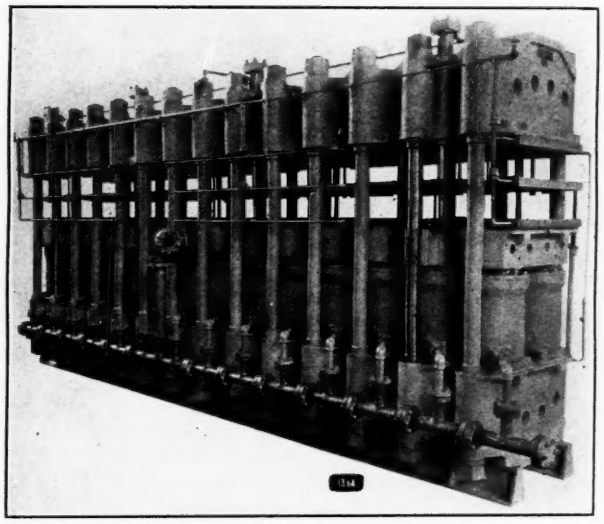
88. Meisenburg and Bock, 1,915,745, June 27, 1933. Example 1: 65 parts of butadiene-1,3, ten parts of alpha-vinylnaphthalene, 100 parts of a 10% aqueous solution of sodium oleate, and three parts of 1/1 normal caustic soda solution are emulsified in a pressure vessel and polymerized with agitation five days at 60° C. A cream-like paste is obtained, which can be coagulated by acidification or by cooling; the yield of coagulate obtained approximates 90%. On vulcanizing the coagulation product with the addition of lampblack, a soft rubber-like mass of very high strength and elasticity results.

By employing in the above example eight parts of 1/1 normal caustic soda solution instead of three, the yield of the polymerization product is increased by about 3 to 5%. The resulting mixed rubber-like mass yields a vulcanization product similar to that described in the first part of this example, but possesses considerably higher elongation.

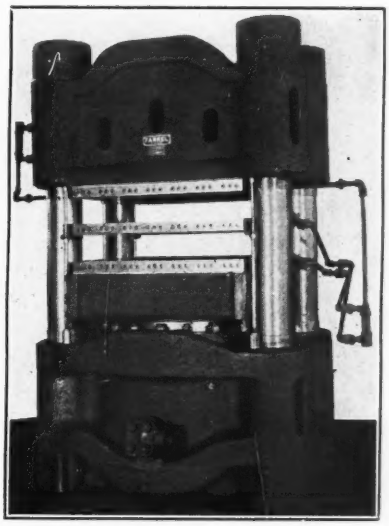
Example 2: 75 parts of butadiene-1,3, 20 parts of alpha-vinylnaphthalene, 100 parts of a 10% aqueous solution of sodium oleate, and three parts of 1/1 normal caustic soda solution are emulsified and polymerized as in Example 1. After coagulation of the latex-like mass, a strong plastic polymerization product is obtained in a yield of about 94%; and its vulcanization product, besides possessing high strength and good elasticity, is especially distinguished by a good elongation.

89. Ebert, Fries, and Garbsch, 1,921,867, Aug. 8, 1933. To produce a polymerization product of butadiene

(*Continued on page* 36)



54-Inch by 32-Foot, Three-Platen Tiling Press

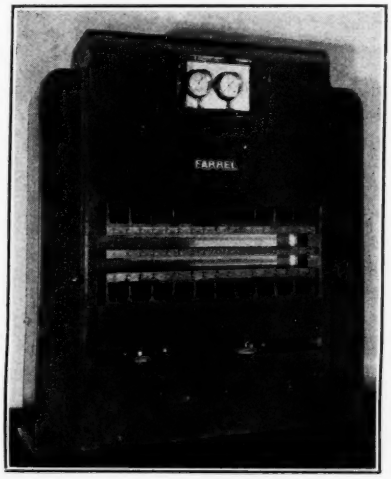


42- by 42-Inch, Three-Platen, 1,000-Ton Hydraulic Press

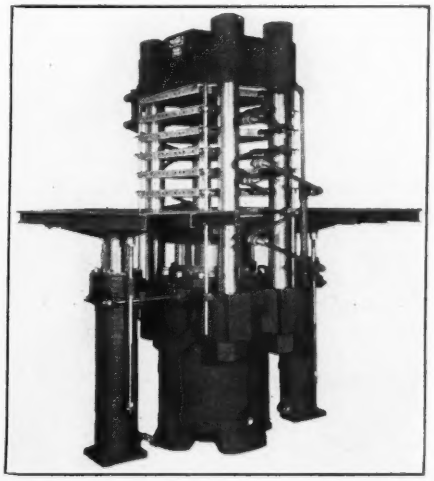
Hydraulic Presses and Other Applications of Hydraulic Power[1]

Walter L. Tann [2]

TURNING from a general consideration of the hydraulic press, we will now examine in more detail the types of presses used in the plastics industries, as rubber, composition flooring materials, and for the newer conception of molded plastics, such as Bakelite, etc. These presses are usually of the tie-rod type, with the bottom cross-head also serving as the cylinder casting for the up-acting ram. Separate heated plates, usually steam plates, are necessary in these industries to transmit heat to the molds or to the materials to be compressed or cured. Asbestos or some other heat-insulating medium is placed between the steam plates and the press platens although a cast insulating grid with plenty of radiating surface is sometimes used. It is desirable to direct heat radiation to the press work.



60-Inch by 30-Inch, Three-Platen, 140-Ton Rubber and Plastic Molding Press with Self-Contained Hydraulic Power Unit



30-Inch by 30-Inch, Seven-Platen Press with Hydraulic Lift Tables

EDITOR'S NOTE: The theory of hydraulics, its history, and the mechanical principles involved, including the importance of the proper use of packing, were instructively covered by Mr. Tann in the July issue of INDIA RUBBER WORLD, pp. 29-32.

[1] Address delivered at the meeting of the Providence Engineering Society, Providence, R. I., May 7, 1936.

[2] Hydraulic engineer, Farrel-Birmingham Co., Inc., Ansonia, Conn.

Platen Presses

Presses for the rubber industry and some other industries are often made multi-opening, that is, with a number of plates interposed between the top crosshead and the moving ram. This multiplies the production of the press by whatever the number of openings used, as compared to a single-opening press. These multiple plates are spaced to suit the molds or materials, and such presses as a matter of convenience are sometimes provided with a small hydraulic elevator directly alongside the press to provide means for loading and unloading the plates.

The heated platens used in the plastics industries are in three general classifications, according to the medium used for heating. The more common method is to heat them by steam, brought into the plates through piping and flexible joints. The plates are drilled and plugged in a regular pattern, to provide proper circulation of the steam and heat conduction at minimum loss.

Electric cartridge and strip heater elements are also used and are ideal for laboratory press use. Heater elements, while low in initial cost, are usually expensive to operate. Temperatures should be thermostatically controlled to avoid waste of current.

Gas heated platens are used on some classes of molded plastic work, particularly small tube and bottle caps and other small pieces produced in great quantities, but have fewer applications than either the steam or electric platens.

The heated platens are usually of rolled steel plate, although Meehanite Metal, a process cast iron, is now becoming popular. Great care must be exercised in the machining of plates, both the interior drilling and the machining and polishing of the plate surfaces.

Presses for the plastics industries are usually operated by hydraulic power from an accumulator system, a battery or group of several presses being served by one accumulator.

Self-Contained Presses

The latest development, however, in the industry is the self-contained press, consisting of the press and pumping system in one self-contained unit. The pump used on this new development is the high-pressure rotary radial piston pump, of which more will be said later. Oil is the hydraulic medium, and the operating pressure on the ram may be controlled at the will of the operator, as dictated by the required pressure at the mold. This press is used for the molding of phenol-formaldehyde compounds and is located at the model exhibition plant of one of the large motor car manufacturers.

It is quite probable that a long time will elapse before the adoption of the self-contained unit press becomes common in the plastics industries, because an accumulator system, properly designed, installed, and maintained, is the most economical installation when a number of presses are in operation. There is no necessity of high-speed operation as we know it in the metal-working industries, as the molding time or curing time is governed by certain thermo-chemical considerations not present in metal working. The control of the press can, therefore, be a simpler system, and with the exception of timing devices, for timing the mold, or the cure, no electric apparatus is needed at the press.

Multiple-Ram Presses

In this same general classification of hydraulic presses are the larger presses for vulcanizing rubber floor tiling, matting, sheet packing, and other materials cured under heat and pressure. These have been built in sizes up to 54 inches wide by about 35 feet long. Presses of this size consist of as many as 28 hydraulic rams, placed two side by side, for the length of the press. There are, therefore, 14 units of two cylinders each comprising this particular tiling press, with an equalizing device to insure parallel movement of the platens throughout the stroke, thus minimizing wear on all parts of the press. The steam plates are drilled in separate sections to insure uniform heating of the whole plate, which is made in one piece.

Belt presses are used for vulcanizing rubber belting, and when designed to handle large conveyer belting, present quite a problem as they must be equipped with hydraulic stretchers and clamps for holding the belt under tension while it is being vulcanized.

The uses to which hydraulic presses are put in the industries that compress, vulcanize, or cure their materials are almost without number, and occasionally a new use will be made of hydraulic pressure that is interesting. For instance, a large press has recently been put into service for pressing sole leather for use in the manufacture of shoes. A pressure of 8,000 pounds per square inch over the area of the leather is exerted by this 3,600-ton capacity press, which has a 36-inch diameter ram, but only an 8-inch stroke. The maximum hydraulic pressure is 8,000 pounds per square inch and is developed by a multi-stage centrifugal pump, acting through an intensifier. The speed of the press is three strokes per minute 24 hours a day.

Leather Pressing

In passing, it might be interesting to look into the customer's reasons for buying this large press. First, the quality of the leather is improved by compressing the fibers, improving the wearing and water-resisting qualities. Second, the enormous pressure of four tons per square inch removes much of the objectionable unevenness of the leather. Third, this leather, being absolutely flat, is worth from 3 to 10% more to a shoe manufacturer because he can get more soles from a perfectly flat piece of leather than he can from a piece that is not flat. Again we see progress in an industry due to the perfection of a special piece of manufacturing equipment, quite far removed from the actual process of shoe manufacture.

Summarizing the features of the hydraulic presses used in the plastics industries, we can say that they are simple in mechanical design of their component parts and that their control systems are usually free from the relatively complicated combinations sometimes used on presses in the metal-working industries. Time is the important factor in the high-rate production in the metal-working industries of today, and this necessitates automatic or semi-automatic systems for the control of hydraulic presses for which there is no need in the industries requiring a time element for curing or vulcanizing processes.

Metal Forming Application

Turning now to the subject of hydraulic machinery in the metal-working field, we find it has been used for a good many years in the form of bloom and billet shears, plate shears, plate-bending presses, riveters, and other heavy equipment used in steel mills, boiler shops, and structural steel fabricating plants. Industry has long accepted the hydraulic principle for the operation of super-heavy duty machinery, but only within the past few years has industry accepted hydraulically operated machinery for high-speed quantity production of metal parts. True, the majority of stampings produced in the

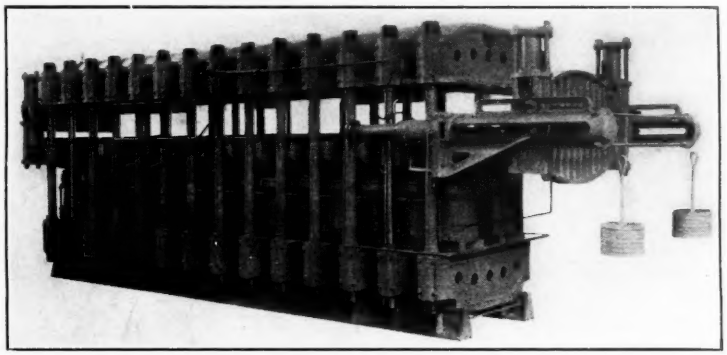
manufacturing plants of this country are now made on the mechanical press, but the modern high-speed hydraulic metal-forming press has met with such an enthusiastic reception that its acceptance as a superior tool for certain classes of work is assured. Chief among the claims advanced for the hydraulic press are these:

1. Fewer rejections of stampings and less trouble on assembly of stamped parts. This is due to the peculiar resilience of the hydraulic pressure medium, resulting in a gradual pressure build-up in the final stages of the forming or "ironing" of the stamping.

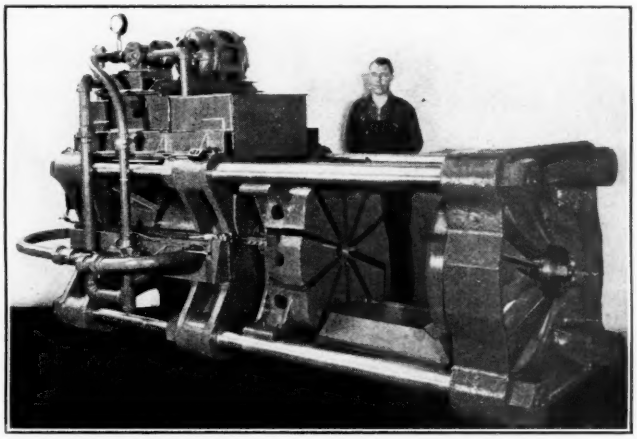
2. Ease of die setting and the facility with which dies can be correctly set, doing away with press or die breakage due to incorrect setting, resulting in longer die life.

3. An almost infinite variation of speed and pressure, as required by the job and easily controlled by the operator by the adjustment of a simple pump-control lever or handwheel, located on the frame of the press.

4. Semi-automatic or fully automatic operating cycles are obtainable, in combination with the advantages listed in the three preceding items.



72-Inch by 30-Foot Two-Platen Hydraulic Belt Press with Hydraulic Stretcher and Clamp



Farrel-Birmingham Rubber Bale Cutter

Metal-forming presses are similar in mechanical design to the basic hydraulic press previously described, with the exception that they are almost always of the down-acting type with the ram and slide moving down to engage the work. They may or may not be equipped with hydraulic ejectors, or hydraulically operated blank holders, depending on the die design and character of the work. Owing to the high speed required before the actual high pressure is put in the cylinder, it is filled by means of an auxiliary pilot-operated prefilling valve which opens and allows the oil used as the hydraulic medium to fill the cylinder as it descends, either by the force of gravity or in addition, the force exerted by the auxiliary pistons. These are also used to raise the ram and slide to the upper position on the return stroke. To speed up the operation of the press a moderate air pressure is often applied to the oil tank to hasten the flow of the oil into the cylinder through the prefilling valve. This pilot-operated prefilling valve is automatic in operation and interlocked either hydraulically, pneumatically, or electrically with the press control system, operating in sequence with the other movements of the press.

The pumping plant for the modern hydraulic metal-forming press consists of a motor driven, high-pressure, rotary, radial piston pump, using a high-grade medium oil of about 900 Saybolt viscosity at 100° F. as the hydraulic medium. The pump suction line runs from the oil tank which also discharges directly through the prefilling valve into the main cylinder. For this reason, as well as to economize on floor space, the pumping unit and oil tank are usually located about the main cylinder, on the top crosshead.

Control is effected by a pilot operated four-way hydraulic valve, or a combination of valves operating in sequence, but all actuated by a small pilot-valve, usually no larger than one's forefinger. In some designs compressed air is used for operating the valve. The item of control is the principal point of interest today among press designers, and with the rapid growth of the application of hydraulic drives and controls to machine tools remarkable advances are being made in the art. Some one has coined the expression "the new hydraulics," and I think it very applicable. To illustrate the point I will mention a recent article on hydraulic controls appearing in a technical magazine in which the author, a research engineer of note from the Midwest, used the electrical analogy of the Wheatstone Bridge to aid in clarifying his explanation of his patented hydraulic control circuit, which he unbalances by means of a small hydraulic choke-coil. To me that completes some sort of a cycle because I can remember that the principle of the Wheatstone Bridge was explained in my day by using the hydraulic analogy. And here we are using the electrical principle to clarify the complications of the so-called "new hydraulics."

Returning to metal-forming presses, it may be of interest to describe briefly the uses of a few presses of widely different types and applications. For our first, let us consider a 200-ton capacity press operating in an aircraft factory and utilized for the forming of duralumin parts used in the construction of airplanes. Owing to the peculiar nature of the work and the material, maple dies are used with sponge rubber blocks acting as blank holders. Great care must be exercised and variable pressure available, with inching control. While used on production, this press can in no sense be compared, as a production machine in the general sense, with the high-speed presses used in automobile plants. Yet it is ideally suited to its job, as it has all

of the inherent advantages contained in the hydraulic press.

In the factory of one of the large electrical manufacturers is in operation a 1,500-ton hydraulic press, flanging and forming metal parts. This press has a 34-inch diameter main ram and two 18-inch diameter auxiliary rams. The large ram produces a pressure of 1,000 tons, and the smaller rams each provide an additional 250 tons pressure. Thus this press can be used as one of 500 tons capacity, 1,000 tons capacity, or 1,500 tons capacity, or the 500-ton capacity can be used for blank holding and the 1,000-ton capacity for drawing. This press has a 97- by 85-inch platen, a maximum opening of 72 inches, and a stroke of 48 inches. The work on which this press is used is all of a heavy nature and quite different from the one in the aircraft factory.

Important to Auto Industry

Perhaps the greatest potential user of the hydraulic press is the automobile industry, and as in every phase of this leading industry, constant watch for production economies is the price of competition. One of the interesting proofs of the claims made by users of hydraulic metal-forming presses is that one of the large motor companies is about to install them to form certain parts from blanks that are decalcomania covered after blanking. The application of the final forming and ironing pressure is so gradual that the plastic flow of the metal will not disturb or crack the decalcomania finish. Owing to the "set" given the metal by the high-unit pressure available at the final dwell of the die, there is apparently no "spring-back" of the formed piece.

Hydraulic presses are used in the automotive industry for the forming of one-piece steel automobile tops. At one of the leading body plants you will find two 750-ton hydraulic presses turning out 1,200 finished tops in 6½ hours. These particular presses are triple action and are composed of the blank holder, the inner slide, and the bottom punch. These functions may be separately used if desired, as needed. While not a very high capacity press from the viewpoint of tonnage capacity, their size makes them an interesting comparison. The bed is 132 by 96 inches. The blank holder daylight is 98 inches and the maximum daylight between table and inner slide is 119 inches. The stroke of the inner slide is 37 inches, and the blank holder stroke is 26 inches. They weigh 250 tons each, extend over 26 feet above the floor and 16 feet below the floor, almost four stories in height. The radial piston pump supplies 285 gallons of oil per minute at a maximum pressure of 2,500 pounds per square inch. These presses are, to the best of my knowledge, the largest high-speed metal-forming presses ever built as to their physical size, but they are exceeded in tonnage capacity by some 2,300-ton capacity presses used in forming automobile chassis frames.

What future developments will be in capacity and dimensions of metal-forming presses is difficult to forecast. The limit of development has not been approached, of course, but whether it will be in speed, control, size, or a combination of all three factors is impossible to state.

The next natural subdivision of hydraulic press application is the forging press. The general requirements of a press of this type are that it must be capable of taking an ingot of a size within the capacity of the press and forging it down to finished size and shape. A number of short forging strokes are necessary while the ingot is hot and is being manipulated between the dies, and the steam-hydraulic forging press is well adapted to this service.

Steam-Hydraulic Intensifier

Perhaps a few words describing the steam-hydraulic intensifier that furnishes the hydraulic pressure for presses of this type will be of interest. Primarily it is a direct-acting steam pump without valves. The intensifier is single-acting, and each stroke produces a single working stroke of the press. The largest forging press in the country is at the Naval Ordnance Plant in Charleston, W. Va., and is of 15,000 tons capacity. It has three 44-inch press cylinders that may be used in combination of one, two, or three, depending on the forging pressure required. The press is served by three steam-hydraulic intensifiers, 76-inch diameter by 84-inch stroke, using steam at 200 pounds per square inch. This develops a maximum hydraulic pressure of 7,000 pounds per square inch.

Hydraulic forging presses are not adaptable to certain classes of die forging work on account of the fact that the dies "dwell" on the forging long enough to chill the metal so that its flow is stopped. With the drop hammer, however, the sharp, quick blow does not cause this as the blow is instantaneous, with practically no "dwell." It seems that this is another proof of the claims advanced for the superiority of the hydraulic press for cold metal-forming use. But by the same philosophy the steam-hydraulic press is ideal for heavy forging and cogging work, as the tremendous sustained pressure exerted penetrates to the very center of the forging and produces a dense, homogeneous steel, less liable to cold shuts and alloy segregation and generally much superior to either rolled or hammered material.

With the stagnation of the capital goods industries during the past five or six years, no new installations of heavy-duty presses, such as the Charleston press, have been made. However some industries are slowly feeling their way toward an adaptation of the self-contained high-speed metal-forming press to light forging work. Tentative specifications have been written, but to my knowledge no such designs are in actual use. The high-pressure, rotary, radial piston pump, with oil as the hydraulic medium, does not lend itself too well to the dirt and dust of the average forge shop, and it is my opinion that for heavy forging presses the steam-hydraulic intensifier system will retain its position for a long time to come.

(To be concluded)

Synthetic Rubber

(Continued from page 32)

polymerize it in contact with sodium and vinyl chloride at a temperature of about 60° C.

Example 1: a mixture of 1,000 parts of butadiene and two parts of ethylene chloride is polymerized in a rotary autoclave in the presence of four parts of sodium. The reaction proceeds quietly and uniformly at a temperature around 60° C. and is completed after three days. A plastic polymerization product having good adhesiveness is obtained, suitable for preparing films and adherent coatings.

Example 2: 500 parts of butadiene are polymerized with an addition of two parts of sodium and 0.25-part of ethylene chloride. The reaction proceeds quietly at about 60° C. and is completed after 1½ days. The resulting product has a good plasticity and may be satisfactorily worked up into a soft resilient vulcanization product.

(To be continued)

Controlling the Odor of Rubber Goods

Much Is Being Done to Banish the Objectionable Odor of Rubber Products

Robert A. Engel [1]

NOT so many years ago the ire of a rubber man, whether chemist, production manager, sales manager, or director, was aroused if one implied that the odor of rubber goods was not only undesirable, but objectionable to the average consumer. Such as would indulge in heresy of the sort would be rebuked and furthermore informed in no uncertain terms that the odor of rubber, on the contrary, was a pleasant one.

Statements of this general nature were made in complete sincerity due to the fact that the men in question were so used to the odor that it was far from unpleasant to them. This is a natural reaction—the paint man likes the odor of drying paints—the textile man likes the odor of his textiles, and so on down the line in numerous other industries. It is difficult to believe that customers, more particularly the ultimate consumer, have a different opinion of the odor.

Some two years ago two surveys (by the sampling method in the form of questionnaires) were made to get the reaction of consumers to various odors. The recipients of the questionnaire were asked to check their odor reactions to a total of 38 products used in or about the home. Columns were provided for voting "Like," "Dislike," and "Neutral."

Sounding Public Opinion

The list contained such things as rubber goods, cleaning fluid, drying paint, drying varnish, drying lacquer, ammonia, celluloid, kerosene, glue, moth balls, metal polish, oil cloth, carbolic acid, new silk, floor wax, and artificial leather. This questionnaire was handled in two ways. One was through our own house organ with a circulation of several thousand, chiefly among technical men in the soap and cosmetic industries. The other was published in a blind advertisement in a magazine distributed gratis through a grocery chain. The inducement to return the questionnaire was a bottle of perfume to the one who in addition to filling out his or her votes gave the best reason in a few words as to why any one of the listed products should be improved in odor. Over 500 returns were received in all, sufficient to indicate the trend of the public reaction to those odors. The magazine votes certainly did not come from the elite judging from the spelling and handwriting so that the results can be considered typical of the reaction of the average person to typical commodity odors.

Rubber Odor Is Disagreeable

The finished tabulations disclosed a startling unanimity of opinion of the two groups regarding odors. The untrained man does not have a less sensitive nose than the trained. Rubber goods was near the head of the disagreeable list, as indicated in the accompanying table. Glue was the most disliked odor, with kerosene, drying paints, and turpentine only preceding rubber goods.

Odor	Magazine % Like	Magazine % Dislike	Magazine % Neutral	House Organ % Like	House Organ % Dislike	House Organ % Neutral
Glue	8	78	14	3	85	12
Kerosene	15	63	22	10	65	25
Drying Paint	32	53	15	19	63	18
Rubber Goods	16	46	38	14	54	32
Rubber Footwear	20	47	33	12	59	29

Some companies in various industries, of course, have gone to the trouble to find the consumer reaction to the odor of their particular products. The fact that they have satisfied themselves that odor improvement would be a desirable advancement is shown by the fact that invariably a deodorant was adopted as a result—and, moreover, stayed adopted!

Rubber Quality Not Affected

The rubber industry is perhaps unique in its relation to deodorizing materials. Before odor can be considered at all, chemists must prove to their satisfaction that the odor ingredient is not detrimental to the rubber compound in any way. Much money has been spent privately and by rubber companies, too, to determine which aromatic compounds are suitable for use in rubber compounds. This is largely history now.

Adaptations Growing

There is a definite use for deodorants in the rubber industry. To be sure it covers but a small part of the industry at this early date in this new field of deodorizing. For example, tire manufacturers need not concern themselves with odor; so that eliminates the major part of the industry. Other branches can and do use deodorants in products of constantly increasing numbers. Rubber substitutes and synthetic rubbers could be improved in odor to the benefit of many classes of rubber products.

Deodorization Not Perfuming

Perhaps it would be well to clarify a popular misconception regarding the use of aromatics in rubber compounds. The thought has been that an added aromatic would perfume the rubber, and who wants perfumed rubber! It is perfectly correct that perfumed rubber is, as a rule, undesirable. Aromatics should be used very sparingly to act as a deodorant rather than a perfume. By proper adjustment of the concentration, the rubber compound odor can be mitigated without giving the goods a definite new and foreign odor.

Patient experimentation is required to achieve this re-

[1] Givaudan-Delawanna, Inc., 80 Fifth Ave., New York, N. Y.

sult. First the aromatic with an odor that will blend properly with the compound odor must be selected; then the proper proportion must be determined. The concentration will vary from 0.025% to 0.1% or even 0.2% by weight of the rubber in the compound.

There is a very definite trend toward improvement in the odor of all types of rubber goods used in the home or on the person. It is now an easy matter to go into a department store and purchase rubber products that are neutral or even very slightly scented. Dress shields, baby pants, water bottles, rubber sheeting, rubberized fabrics, rubber toys, footwear, prophylactics, and even girdles without a rubbery odor are now on the market. Narrow fabrics and rubberized thread free from rubber odor can also be procured by knitters of elastic fabrics of all types. Rubber cements with the solvent odor definitely improved are also a reality.

The fact that once a deodorant is adopted and its use continues and generally extends to other lines is convincing evidence that a demand exists for better smelling rubber goods, and the manufacturers who offer these have a merchandising advantage.

For Latex Products

The advent of latex and its growing use on a commercial scale has introduced new odor problems, and on these there likewise has been a very considerable amount of original research work. In the first place an aromatic which works nicely in a crepe rubber compound is very probably of no value in a latex compound. The product may discolor or coagulate the latex or will be difficult to disperse. The rapidly growing use of latex adhesives has created a new odor problem—to offset the odor of ammonia, which has been done quite well.

Perhaps it would be of interest to outline the steps taken and difficulties to be overcome in arriving at products which could be used in latex work. The investigation had to be started practically from scratch, as virtually nothing of assistance could be found in the existing literature. The principal aromatic products were first classified according to chemical types, and three of the better smelling, lower-priced aromatics from each group were then incorporated in 38% and 63% latex in varying concentrations, and allowed to stand at room temperatures for one week. The various samples were observed twice daily, and notations made accordingly.

Latex Requires Special Types

Many things were revealed from these preliminary tests, notably the latex was coagulated, the aromatic was thrown out of suspension, and discoloration to varying degrees. In some instances the bad effect was roughly proportional to the concentration present; in others it was equally as bad irrespective of the concentration. Some were satisfactory in 63% latex, but not in the 38% latex. This eliminated many aromatics from further consideration, with the exception of the group that did not stay emulsified.

The next step was to find an emulsifying agent that would be compatible both with the latex and aromatic oils. A number of products were tried with varying degrees of success. One material was of outstanding merit, and further checks convinced the laboratory that it was ideally suited for use in latex as well as for mixing with perfuming oils. The tests with all aromatics previously found suitable—also those that were insoluble—were repeated with this agent added. Some of the aromatics which previously had separated were now all right when first mixed with the emulsifying agent. These tests were carried on for a much longer period of time than the original ones, and a few more products were eliminated. So far no attention was paid to odor; so the next series of tests were made to find aromatics that would be effective in one or both of the following particulars: (a) blended well with the cured latex odor; (b) blended well with the ammonia odor.

Cures of the latex revealed that many compounds gave a peculiar or unpleasant resultant odor. These were not eliminated but were held for blending purposes when the perfumer would produce his finished odors. Some compounds modified the ammonia odor of the liquid latex fairly well, especially when sufficiently high concentrations were employed.

By this tedious and lengthy process of elimination a mere handful of aromatic products were left to work with, none particularly prepossessing in odor, but at least they were compatible with latex. This list was then turned over to the perfume laboratories to be blended into pleasing types. These compounds were then checked in the latex, and further modifications were made to overcome odor objections which came up especially when cured. Many types of accelerators also introduce definite odors of their own which must be overcome.

Latex is finding applications in many other industries, notably paper and textile, and carries along with it the problem of odor of a type heretofore entirely unfamiliar in those industries. Here the need of a deodorant is now recognized, and some very valuable work has been done toward elimination and neutralization of the cured latex odor.

As more and more work is done with aromatics, new and previously unknown properties are discovered, and it can be reasonably expected that research in the next few years will bring out some information of value to a diversified list of industries.

Airplane Deicing Preparation[1]

As an example of a suitable composition to be applied a rubber surface to reduce the adhesion of ice, the following substances may be mixed in the proportions stated in parts by volume: pine oil 4, diethyl phthalate 4, castor oil 1. This mixture has the added advantage that its solubility in rubber is reduced at ice forming temperatures so that it will exude from and render the surface well lubricated while it will produce a substantially dry surface in the rubber at ordinary temperatures.

When this mixture is applied to a vulcanized rubber of the composition used in preventing ice accumulation upon aircrafts, the oil will exude from the surface at the ice forming temperature and replace any oil removed from the surface by the air forces, by vaporization, or by removal with the ice. Additional oil may be applied as the supply is exhausted. When a neutral oil which does not radically alter the physical properties of the rubber is absorbed in rubber, the rubber is actually preserved against oxidation.

Any rubber mixture capable of satisfactory vulcanization may be used for producing the rubber surface. The following mixture is typical: smoked sheet 100 parts, zinc oxide 10, sulphur 3, accelerator 1.

When the oil is added to the vulcanized rubber to reduce the adhesion of ice to the surface, the rubber mixture should be one, as above, with little or no oil soluble sticky material that would render the surface adhesive to ice.

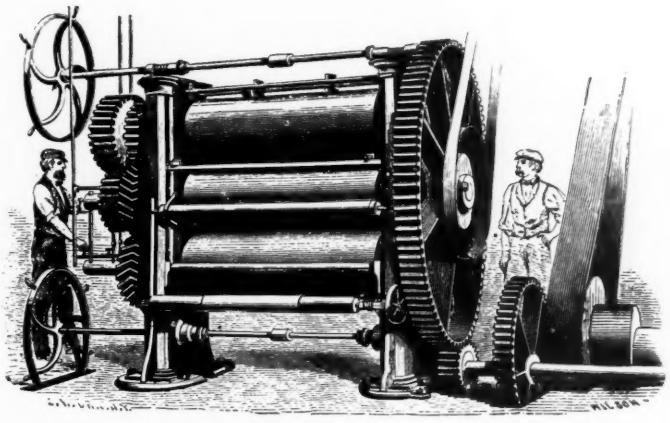
[1] U. S. patent No. 2,017,593, Oct. 15, 1935.

The "Monster's" First Hundred Years

Ralph F. Wolf[1]

A SQUAT giant, roaring at his work as he has roared for a century past, will soon begin a second hundred years in the service of the rubber industry.

Executives who take pleasure in fastening handsome, gold-plated service buttons on the vests of their twenty- and twenty-five-year men would do well to pin not one but a handful of badges on the steel chest of this metal Methuselah, for they have never had a more faithful worker.



One of the Original Calenders Used in the United States—Similar to the Chaffee "Monster" of 1836

The veteran, whose hundredth birthday falls on August 31, 1936, is the calender, originally christened the "Monster" by its inventor, Edwin M. Chaffee, one of the truly great pioneers of the rubber business. Calender and mixing mill, the two machines common to every rubber shop in the world, are both the brain children of the New Englander. For them he should be regarded by the modern rubber man with almost as much reverence as is accorded Charles Goodyear; instead his name is unknown to all but a few of the industry's technicians.

Rubber manufacture got away to a later start in the United States than it did in England. In fact, the gum did not come into use in this country at all until 1820 when the first rubber shoes, covered with gilt and with toes turned up like those on Chinese footwear, were imported from Paris. In 1823 Boston seafaring men brought a few pairs of rubber shoes from Brazil, and these commanded a ready sale.

The country's first rubber shoe advertising appeared February 12, 1824, when the *Independent Chronicle and Boston Patriot* carried the announcement: "Gum elastic shoes—Forty pairs of superior quality and good size this day received by J. W. Goodrich, No. 76 State St. These shoes will be warranted to keep the feet dry as well as warm, and if on trial they should not do so, the money will be refunded. Five hundred pairs have been sold in this city within one year and they have given perfect satisfaction."

Boston merchant Thomas C. Wales saw possibilities in the rubber shoe business and in 1825 imported five hundred pairs from Para. These were clumsy, ill-shaped articles which the natives made by repeatedly dipping clay molds into *Hevea* latex, drying the film over a smoky fire, and when the shoe was built up to a sufficient thickness, washing out the clay and stuffing the product with grass to keep it in shape. Despite their crudity these shoes sold at prices ranging from $3 to $5 a pair, and Wales realized such profits that he immediately had well-shaped lasts made and sent to the Amazon. Within the next few years Brazil had sold half a million pairs of shoes in Europe and America.

The few lots of crude rubber which had been imported into the United States up to this time had sold for 5¢ a pound. Finished shoes sold for several dollars. Obviously, here was a profitable business, and it was natural that it should attract the attention of many enterprising persons.

One of these was shrewd Yankee Edwin Chaffee, leather goods maker of Roxbury, Mass. Instead of trying to make rubber shoes, this worthy thought that he might be able to make a rubber varnish which would render leather waterproof and at the same time give it a smooth, finished surface. He began his experiments in 1831 and soon found that by dissolving rubber in turpentine and adding a quantity of lampblack he had a mixture which gave exactly the finish he desired when it was spread on cloth or leather.

Chaffee interested John Haskins and Luke Baldwin in the process and for some time they continued their experiments at covering cloth with rubber by means of a spreading machine of Chaffee's invention. So enthusiastic did they become that 1832 saw the formation of the first rubber company in the United States. The charter, issued February 11, 1833, proclaims: "Be it enacted . . . that Lemuel Blake, Luke Baldwin, Edwin M. Chaffee and Charles M. Davis, Jr., . . . be, and they are, created a body corporate, by the name of the Roxbury India Rubber Factory, for the purpose of manufacturing at Roxbury, in the county of Norfolk, india rubber cloth and leather and other india rubber goods."

The Roxbury company began to make rubber coated shoes, rubber clothing, life preservers, coats, caps, wagon covers, carriage traces, and other articles. Its initial capitalization of $30,000 was increased to $240,000 in 1834, to $300,000 in 1835, and to $400,000 in 1836. This early success resulted in a boom which saw many other companies formed in the vicinities of Boston and New York and the investment of several million dollars.

[1] With the B. F. Goodrich Co., Akron, O.

Chaffee was constantly contributing new ideas to the industry. In 1833 he was granted patents for rubber hose and mail bags, and in 1834 he patented the first rubber boot. Toward the end of 1835 he constructed the first mixing mill, but did not patent the device until 1836 when a patent covering both the mill and the calender was issued.

Chaffee's mill was not the first mixing device used in the rubber industry. This honor falls to Thomas Hancock's masticator or "pickle," an alias tacked on to the machine to conceal its real purpose. The Englishman's "pickle" consisted of a spike-covered cylinder turning inside a chamber. Hancock expected it to tear rubber into fine shreds, but found, to his surprise, that it welded the scraps with which he charged it into a solid lump instead. In addition to using the machine for massing together waste scraps of rubber he used it for incorporating other ingredients into the gum. Nothing resembling the "pickle" has been used in the rubber industry for years unless the imagination is stretched to the point of granting the Banbury to be of the same species.

Unlike Hancock's, Chaffee's machine has never been superseded. The mills that grumble and roar in the world's gum shops today differ but little from the one Chaffee built over a century ago. They have grown larger and more powerful and have many refinements, but essentially they are the same. The "preparing machine," as he labeled it in the 1936 patent, differed entirely from Hancock's; instead of the rubber being mixed inside of a chamber it was compressed between two steam-heated iron rolls. The rolls turned at different speeds as they do to this day, and Chaffee found that the combined rolling and slipping action tore and softened the rubber until it formed a smooth sheet on the roll and easily took up the coloring matter and other ingredients placed on top of the batch. The rolls were six feet long, one was 27 inches in diameter and the other only 18, and they came into contact on one side about ten inches from the top of the larger one.

Following his successful introduction of the mill, Chaffee had no trouble in obtaining a hearing when he informed the directors of the Roxbury company that he could save them the $50,000 they had been expending annually for rubber solvent. Until this time all the waterproof fabric had been produced by coating cloth with rubber in solution. Rubber and lampblack were mixed on the mill and then dissolved in turpentine. A steady stream of solution from a suspended box was flowed on to fabric as it unwound from a roll. The coated cloth was then festooned on wires extending the full length of a long building and left for several days to dry.

Chaffee's new idea was to cut out the loss of expensive solvent and at the same time speed up operations by spreading the rubber dry. Though his proposed machine looked expensive, he was told to go ahead. The coating machine, completed in 1836 at a cost of $30,000, soon proved well worth its price. It not only saved 30 to 36 barrels of turpentine a week, but reduced the labor by half. Fabric prepared by the old "flowing" process had sometimes required eight or ten coatings, each of which needed a long time to dry. Now an equal thickness of rubber could be deposited after three or four coats which could be applied in rapid succession.

The coating machine weighed 30 tons. This was considered a tremendous bulk at this early stage of the machine age, and it is little wonder that so huge an affair immediately won such names as "Monster" and "Mammoth." The "Monster" consisted of four hollow rolls placed one above the other and heated by steam. The rolls were six feet long, the top and bottom ones being 18 inches in diameter and the middle two 12 inches. The roll next to the top moved more slowly than the others, creating a slipping action between itself and its neighbors. The cloth which was to be coated passed into the machine between the two middle cylinders, then down and around the bottom one. The rubber compound, which had been prepared on the mill, was fed in between the two top rolls and, as it came into contact with the fabric, was wiped from the roll and into the cloth. Time has confirmed the admiring statement concerning calenders made by Charles Goodyear in his *Gum Elastic*, published in 1853:

"It is now generally agreed by manufacturers in this business that the machinery, or at least the principle of it, is perfect. It is hazardous to express an opinion, in this age of improvements, that any machinery or thing is perfect; but the best reason for believing that this machinery (the Mammoth) does not admit of further improvement in principle is that no complaint is made of it. It is of the simplest kind doing the work with great rapidity, although it requires great mechanical power owing to the toughness and tenacity of the gum."

The patent for the mill and the Mammoth was granted August 31, 1836, and, when it expired, a seven-year extension until 1857 was made.

Without exception, turpentine solution was used by all of the other early companies. The natural adhesiveness of rubber was accentuated by this oil, and the goods which appeared on the market were always sticky in warm weather although stiff enough to stand alone in winter. One by one the other companies failed; Chaffee's timely invention of the Mammoth kept the pioneer Roxbury firm going for some time because it could manufacture without using solvent.

As Goodyear explains it in *Gum Elastic:* "The invention of this machine resuscitated the Roxbury company and caused the stock to advance to par, after nearly the whole capital of the company had been sunk in fruitless attempts to manufacture the goods with solvents. It was supposed that the solvents being dispensed with, the difficulties of manufacture occasioned by the adhesiveness and decomposition of the goods, would be quite surmounted, and that the gum would be at least as good as in its native state.

"It was subsequently ascertained by the company that their embarrassments were not owing to the solvents that were used in the manufacture but to adhesiveness being an inherent property of the gum. The stock again declined, until the manufacture was completely abandoned by the company. . . ."

It was in 1839 that America's first rubber company went under although its name continued until 1844, when it was changed to The Goodyear Mfg. Co. In 1845 the business was reincorporated as the Boston Belting Co.

The original Monster had a checkered career. In October, 1843, it was sold to John Haskins at public auction for $525. The patent which Chaffee had sold to the Roxbury company for $10,000 went to Haskins for $1.50. The next year Charles Goodyear purchased the Monster and patent from Haskins and later transferred it to the Naugatuck India-Rubber Co., in which he was interested.

IMPORTS OF ZINC OXIDE (DRY) FOR CONSUMPTION IN the United States in 1935 totaled 1,931 short tons and of zinc oxide in oil 59 tons, compared with 1,204 and 64 tons, respectively, in '34. Exports of zinc oxide were 1,140 short tons in 1935 compared with 1,155 tons in '34. *U. S. Bureau of Mines.*

The Rubber Business at Home and Abroad

R. P. Dinsmore [1]

AN ANALYSIS of any American industry which has as its object forecasting and planning for the future, must consider our unequaled development in the 75 years preceding the depression. Has it been due to the national characteristics, the abundance of our natural resources, or to our form of government? Perhaps some light can be thrown on the question by comparing the progress of the various English-speaking peoples and, secondly, by comparing various other countries which have different forms of government.

If we are to do this, however, we must remember that the form of government affects the people's activities in proportion to their complexity. Thus a simple agricultural state requires but simple regulation—the collection of taxes, administration of justice, and regulation of foreign trade. A complex industrial state, on the other hand, requires sound regulation of the distribution of goods, industrial competition, and the many problems raised by specialized labor. In the one case, the form of government is not so important as the honesty of its application. In the second case, proper regulation requires an understanding of and, hence, representation from, all classes and types of activity.

It should be remarked here that aside from national customs and habits of thought, the form of social activity has a profound effect on the progress of the people. The industrial state constantly presents the urge to attain higher standards of living. Surrounded by articles of comfort and luxury and subjected to intensive sales appeal, the inhabitant of the industrial state, like a child in a toy shop, wants to buy everything he sees. He is prone to extend his credit to the limit.

The rubber industry has suffered immeasurable harm from disastrous competition. Critics for many years and from all quarters have used this condition as a basis for the defamation of the ability and the integrity of rubber industry executives. Walter H. Dickerson has done much to reveal the fallacy and the shallowness of the contentions of these critics, who have merely added insult to chaos without even attempting to contribute something of a constructive nature.

This article, arranged by R. P. Dinsmore from the substance of his address before the Rhode Island Rubber Club, June 4, is of especial importance since it marks the first attempt by a member of rubber industry management to disseminate thought-provoking facts regarding the fundamental factors — some without precedent in any other industry—which have led to the chaotic conditions that the critics have quite generally mistaken as a cause rather than as a result.

The author says, "This discussion is not intended to be an exhaustive proof of any thesis. It is merely to indicate certain probabilities, which may justify further thought."

EDITOR'S NOTE.

Rubber Industry Here Outgrows Pioneers'

If we turn now to the rubber business, a few general facts are of importance. It is said that the first in the field has the advantage. Yet the planting of rubber was started by the English and followed by the Dutch. Cotton was first grown in distant lands and, for years, the spinning and weaving of cotton was almost completely monopolized by England. It is my recollection that the first automobile was made in England and the first pneumatic tire in Ireland. The cord automobile tire was made in England and the forerunner of the non-skid tire came from France. I believe, although I could not find the reference, that the first rubber hose came from England and certainly many of our other rubber goods, such as proofed cloth, rubber shoes, and rubber thread, came from England and Europe.

Since the only basic contribution to the rubber industry from the United States was the method of vulcanization, it is apparent that our position in the field does not result from being the first in it. Our major contributions to the industry have been in the form of product improvements and new processes. Nevertheless starting with a registration of four automobiles in 1895 we have now reached nearly thirty millions and, as a consequence, have reached about 70% of the world's rubber business (since reduced to 50%). Let us ask ourselves again to what extent this has been brought about by our national characteristics, our form of government, and our natural resources.

Effect of Government

This discussion is not intended to be an exhaustive proof of any thesis. It is merely to indicate certain probabilities, which may justify further thought. Hence I will not apologize for suggesting at this time that a comparison of the progress of our industry in England, Canada, Australia, and the United States indicates that neither natural resources nor yet a liberal form of government can explain the differences. Also, if national characteristics are to be given the credit, they cannot be racial characteristics but rather attributes acquired during a few generations. Comparison of England, France, Germany, and Italy throw further light on the effect of government.

Perhaps from such comparison we shall conclude that

[1] Assistant to the factory manager, Goodyear Tire & Rubber Co., Akron, O.

stability of government and its recognition of the importance of industry are prime essentials.

Anti-Industry Attitude Is Harmful

We have finally to ask ourselves whether there has been a change in our own rate of progress in recent years. To those who believe that, when the effect of the depression is discounted, as well as the artificial stimulus of excessive government expenditures our industrial progress has suffered recently, in comparison with that of England, for example, it would appear significant that a deliberately anti-industry attitude in government can go far to offset other advantages. It should be remembered, however, that the cause should not necessarily be attributed to the *form* of government. It may rather be the *attitude* or the administration of government.

More Profit in Foreign Operations

Let us return once more to the rubber business. We may fairly consider that industrial development depends upon the ingenuity and mental capacity to invent, the sagacity and vision to select the valuable inventions, and the ability to develop a practical process and dispose of its output at a rate which will furnish all engaged in the enterprise with at least the average standard of living. Viewed in this light, the contributions of this country to the rubber business meet the first two requirements, but have, in recent years, failed to meet the third. It should be noted, at this point, that in recent years American concerns manufacturing abroad have profited much more from their foreign business than from their domestic business.

This directs our attention to conditions affecting marketing. We may first note that, on the average, selling prices abroad are higher relative to the cost of services—both production and selling—than is the case here. The relative costs of materials and equipment, here and abroad, vary more widely due chiefly to the fact that those items peculiar to the rubber business are not produced in all countries where rubber goods are manufactured. However the net result is a greater profit to the investor abroad than here. This is fostered by and helps to perpetuate a lower standard of living for the foreign workmen.

If any general statement may be made about technological accomplishments in our industry, it is that the foreign technologist has shown outstanding performance in the developments that can be completed in the laboratory; while American technologists have excelled in those which must be perfected in the plant. Of course there are numerous exceptions. As to machine development it has been my observation that the foreign trend is to small, simple machines; while ours is to the large complicated type. There are a number of reasons for this, some of which will be mentioned.

Effect of Social Attitude

It is significant that the foreign chemist and engineer are socially much farther removed from the workmen than here. It is perhaps not strange that there is less appreciation abroad of the plant problems and the viewpoint of the workman, and that this lack of common interest has resulted in fewer plant developments in the rubber business where the supervision is largely non-technical as compared with the purely-chemical business where the reverse is true.

One cannot fail to note also that, where the cost is low (as with foreign labor) the urge to save and improve is diminished. Thus, in low labor markets, labor-saving devices are of little interest, while, if *materials* are scarce and expensive, there is greater incentive to develop new and cheaper ones.

There may seem to be some contradiction in the earlier statements that in industrial countries the urge to raise living standards is great and that in European industrial countries the standards are relatively low. The difference is probably brought about by habitual experience abroad with a wide gap between the fortunes of the working class and the well-to-do. There is less expectation of improvement and more tendency to accept existing conditions. This is reflected in less strenuous effort, less initiative, and a tendency to prefer longer hours at a slower working pace. Thus smaller, cheaper machines are more economical. There is a conservative tendency to resent change and there is slowness in learning. This is partly inherent in the people, but not entirely, because American concerns have been able by careful selection of labor, adequate training and compensation, greatly to increase the output and initiative of foreign labor.

Government Regulation Lowers Living Standards

In certain countries where government regulation of industry has been carried to extremes, we find many factors tending to increase costs and lower the general standards of living. Some of these result from the action of ignorant officials who wish to assert their authority, others result from attempts to support a weakened currency or to obtain military advantages, by making the country self-sustaining.

Thus there is the attempt to produce materials like rubber and carbon black at any cost, rather than to import them. There is also the government regulation forcing a portion of each concern's profits into the purchase of machinery.

We can hardly avoid a few words about Russia and Japan in our discussion of the world-aspects of the rubber industry.

The Russian Situation

Russia presents a unique picture. A nation of peasant farmers, it has passed from arrogant imperialism to arrogant communism. Its new leaders have dreamed a dream of industrial revolution on an unheard-of scale. Of course the people cannot be trained as efficient industrialists in one generation, but in time they may. They are one of the few large nations who would tolerate the pains of transition, but for the great majority of the Russian people, any change from their former circumstances must have been an improvement.

The rubber business in Russia cannot be appraised with certainty, both because information is unreliable and because it cannot be measured by our standards. Research, of a peculiar kind, is being carried on on a tremendous scale. There has been much publicity about their plantation rubber and their synthetic rubber. There have been numerous rubber factories—chiefly for tires and boots—erected under the supervision of foreign experts. The result so far has been to make what are probably the poorest rubber goods produced in the whole world.

The Rubber Industry in Japan

Japan can be dismissed in a few words. They are a nation of clever imitators, with apparently but little originality. They have had considerable success in pro-

ducing articles like rubber shoes and very indifferent success with tires. I suspect that the requirements of the tire business change too rapidly for them. They are out of date before their last copy is made.

Cause of Disastrous Trade Practices

In our own country we have built up a great business on the theory of the economy of mass production. This has meant the concentration of output in a few localities —large units, large machines, heavy capital investment. Our labor rates by-and-large have been high. The fluctuations in price of our principal raw materials have been great and frequent. These things have led to practices frequently discussed and criticized. Thus, in order to take care of peak demands, companies have invested heavily in synchronized mechanical units. When trade is good, the large companies with long materials commitments and efficient machinery can produce and sell profitably at prices which are ruinous to small, poorly-financed competitors. On the other hand, when times are bad and prices of raw materials decline, the small manufacturer, buying at spot prices and, with lower overhead, can trim his production to fit the market and sell profitably below his large competitor's cost. Hence we are injured by bad trade practices brought about both by violent fluctuations in materials prices and by undue concentration of production.

Industry Stabilization Ahead

It has become only too clear of late that concentration of the industry has made it vulnerable to the attacks of organized labor. Although the highly-mechanized mass production has permitted the payment of the highest labor rates in industry, the professional organizer, abetted by both national and local politicians, has been able to disrupt production. Yet there is always some benefit to be derived from bitter experience. Individual companies may be damaged permanently, many workmen will be severed from the industry, but eventually the industry as a whole may profit. It is quite possible that there will be in the future a greater community of interest between the large and small producers. The wise manufacturer will avoid the handicap of the too-highly mechanized plant and with the resulting greater flexibility will no longer be driven to extreme and unprofitable measures to maintain volume in a depressed market. With this disturbing feature minimized there may be a greater tendency to cooperate in the still-serious problem of the price fluctuation that occurs with raw materials.

Critics Ignore Fundamentals

I might logically close this discussion at this point, yet I feel that there is a word of warning due to the critics who come both from within and without our industry. There seems to be a general feeling that all our troubles can be solved by higher prices which are combatted by an obstinate group of rubber officials. Fundamentally, increasing prices cannot solve the problem, although temporarily it may help.

A better conception of the problem may be obtained if we look at the workman's earning power in terms of commodities as well as money. Some of his purchased commodities are for immediate consumption, such as food and clothing, and some, such as his home and automobile, are used over a more extended period. Thus it is necessary to consider his productive life as a wage-earner, as well as his yearly earnings.

If our worker has a productive life of 25 years and an average earning power of $1,000 per year, he obviously should not plan to expend over $25,000 during his productive life. However, if for one of many reasons, he establishes his scale of living on a basis which will cause him to expend $27,000 in that period, some condition must be changed. Either he must alter his scale of living or earn more money. The "New Deal" solution is to earn more money, by getting a higher wage scale. Obviously this system cannot give relief to any large number, because if all wages rise, all prices rise and the commodity value of the wages received is no greater than before.

Man-Output Determines Progress Trend

If our worker were self-sustaining and produced all commodities for himself he would, if his scale of living were unsatisfactory, attempt to improve it by working harder or a greater number of hours. In other words, he would seek to increase his man-output. When man-output rises in industry in general, living standards go up. This may be brought about by working longer hours or by the use of more effective labor-saving machinery, or both.

It is true that individuals cannot, at will, readily increase their working hours in times of depression, because it is difficult to find employment and because there is public sentiment in favor of shorter hours to provide more men with jobs. There is, however, no general willingness to reduce living standards and, in fact, there are powerful forces against it, because the ramifications of industry, each with its specialized workers, have been established to provide the variety of commodities used in a prosperous scale of living.

We are always living beyond our income in prosperous times and, in bad times, a certain number of people have to starve to make up for it. However in times of depression we have always in the past studied our production methods and reduced costs or what is the same thing, increased our output per man, so that, on the average, we could pay for most of our purchases. This system is wasteful and painful, but it brings progress. It is a system of over-expansion, followed by cost adjustment. It cannot be controlled by one industry, but must be common to all. It is not to be fooled by price juggling or currency tampering. It does not place "human values above property values."

Volume, Not Hours, Is Measure of Work

We are sometimes puzzled by the phenomena of overproduction and want occurring together. The laboring man thinks it is because the capitalist has grabbed all the money, the capitalist blames the banker, etc., etc. Yet at such times everyone is a loser and, if all plants were manned to capacity, people could not buy. Why? Because the average man cannot produce in his working day his share of the commodities which the country is trying to sell him. And if he can't produce them, he can't buy them. So, it seems clear, that shorter hours to put more men to work and the use of less labor-saving machinery are working diametrically opposite to the forces of recovery. We can only work shorter hours as we are able to increase our output per individual and we can only have new commodities as we learn to make the old more cheaply. And the more political parasites, pensioners, and pan-handlers we carry on the back of industry, the more hours must labor work in order to pay the bill.

Editorials

Economic Principle and Rubber

INDUSTRIAL and social advancement in general in this nation and other progressive countries has been due to the interdependent four-phase economic cycle consisting of (1) increased man-output, (2) reduced product costs (3) widening fields of consumer acceptance, and (4) increased employment of people. This principle is sound and true as has been amply proved by the individual and inter-relating histories of progress of innumerable important industries; current theories and imposed influences to the contrary, notwithstanding.

The rubber industry may proudly reflect upon the stupendous benefits to mankind that have resulted from its long swing adherence to this fundamental economic principle. Of conspicuous significance is the story of the tire industry and its relation to that of the automobile, as portrayed by P. W. Litchfield, president, Goodyear Tire & Rubber Co., in a recently published monograph. It is in part as follows:

"Of the raw materials essential to our industrial age, rubber is one of the most important. Its uses are almost without number.

"Surpassing all other uses in importance, however, is the part that rubber plays in providing the pneumatic tires for America's 26,000,000 motor vehicles. [Note: In 1895 only four cars were registered in the United States.]

"What would an automobile be without rubber? The modern automobile was almost impracticable until the secret of making pneumatic rubber tires was discovered only a little over forty years ago. The cushioning effect of rubber tires, replacing the old steel-rimmed wheels, made riding in a motor vehicle a pleasure. Engineering research, skillful workmanship, and the development of improved methods of manufacture have all combined to produce better tires at lower cost.

"This progress in the art of tire-building has had the effect of rendering automobile transportation more economical, as well as more comfortable. It has therefore given a special stimulus to the automobile industry. The notable growth of the rubber industry, in turn, has been due to the increasing demand for automobile tires. The rubber industry and the automobile industry today are mutually interdependent.

"Rubber tires have been steadily improved. Since the early days of the rubber industry the leading manufacturers have been striving to produce a better product. Neither trouble nor expense has been spared to learn how the best available tire can be improved and made more serviceable. The results of these efforts have been most evident in recent years, as the following facts will show: In 1908, twenty-eight years ago, a good rubber tire was not expected to last more than 2,000 miles. Even the limited service that a tire gave was interrupted by all-too-frequent punctures and blow-outs. Today motorists get ten times 2,000 miles from their rubber tires.

"Rubber tires have cost less and less. While the rubber industry has been providing American motorists with better tires, it has also progressively lowered the price of its product. In 1908 the cost of tires was the greatest maintenance expense connected with the ownership of an automobile. A small tire cost $35. A large tire cost $125. Today the cost of tires is an insignificant item in the family budget. A first-quality tire for a low-priced car costs $8. Similar tires for large, heavy passenger cars cost no more than $25. Rubber tires now cost less than one-fourth of what they did before the War and last ten times as long. Expressed another way: In 1908 a dollar spent for rubber tires bought 50 miles' worth of tire travel. In 1936 a dollar spent for rubber tires buys 2,000 miles' worth of tire travel—AN INCREASE OF 3,900%."

Sales Policy Legislation

MUCH of the federal legislation of the past three years has been so intimately directed at the various phases of business administration that executives have, of necessity, acquired the habit of studiously familiarizing themselves with interpretations of each new law in the light of its application to the policies of their respective businesses. Among such statutes the Robinson-Patman Anti-Price Discrimination Act, effective June 19, 1936, amending Section 2 of the Clayton Anti-Trust Act, approved October 15, 1914, has engaged the attention of executives, trade associations, and their legal advisors as has no previous law.

Even though the language of the act is so general as to make difficult the interpretation of its operation and scope as applied to any given industry, it is generally conceded that it strikes sharply and effectively toward the elimination of commonly existing sharp sales tactics which have fostered the dual disadvantages of threatening the continued existence of the small manufacturer and merchant and at the same time have stifled the progress of distribution methods which have been so conspicuously out of pace with the progressiveness of manufacturing developments.

D C McRoberts

EDITOR

What the Rubber Chemists Are Doing

Report of the Crude Rubber Committee[1]

Division of Rubber Chemistry, A. C. S.

THE Crude Rubber Committee was appointed by Chairman Cadwell at the regular meeting of the Division of Rubber Chemistry in New York, N. Y., on April 23, 1935. After one meeting in New York and two in Akron the committee presented a preliminary report to the Division of Rubber Chemistry at the Akron meeting on October 1, 1935. In the first report the functions of the committee were defined and a list of foreign contacts was reviewed. In addition a tentative formula for testing crude rubber was presented. This formula, however, was not published as the committee felt that additional work on it was necessary.

The committee had planned to hold at least two meetings before the meeting of the division in Kansas City, but owing to circumstances beyond its control it was possible to hold only one meeting. This was held in Akron on March 30. A great deal of information, however, has been exchanged by correspondence and, as a result, the committee agreed at its meeting in Akron on March 30 to make certain definite proposals to the division.

Since the Akron meeting of the division contacts have been made with additional technical organizations on the producing side of the crude rubber industry, and in all cases the committee has met with a spirit of complete cooperation. Numerous letters and reports have been received from these various organizations.

Particular attention should be called to the efforts of the Rubber Research Institute (and the London Advisory Committee) and to a group in the Dutch East Indies. Edgar Rhodes, of the Rubber Research Institute, since his return to England and later to the Far East, has been particularly active in acquainting the producers with the problems confronting the consumers. We have learned of Dr. Rhodes' efforts not only through the publication of his papers in the trade journals, but also through correspondence and discussions with other individuals in the producers' technical organizations.

The committee has just received a communication from the Rubber Research Institute, in which it is stated that various English consumers have complained about processing difficulties with certain light-colored smoked sheet beginning to appear on the market. This sheet is made in a new more efficient type of smokehouse and is to be distinguished from the Socfin type in that the smoking is done in a house in which the smoke is carried to the rubber through an underground flue. Some of the smoke bodies are condensed out in the flue, and an amber-colored sheet results instead of the darker sheet. In the Socfin type the preparation involves rapid drying in hot-air chambers, where the heat is supplied by steam pipes.

Dr. Rhodes would like to know whether American consumers have noted any serious difference between light- and dark-colored smoked sheet as far as processing is concerned. Other than processing, is there any preference between light and dark smoked sheet? Particular attention is called to the fact that this question refers only to differences between light and dark standard smoked sheet No. 1. The Socfin type of rubber is not involved. The committee would appreciate it if members of the division would submit any data available. Expressions of opinion are not acceptable, as only accurate information is to be sent to the Rubber Research Institute. Any comments should be sent to the chairman of the committee. Committee members will check this item in their own laboratories.

The committee is pleased to announce that it is in receipt of a communication signed by L. R. van Dillen, of the A. V. R. O. S. Proefstation, who is writing in the capacity of secretary of a Crude Rubber Committee just set up in the Dutch East Indies. This committee has been formed with the express purpose of cooperating with the Crude Rubber Committee of the Division of Rubber Chemistry of the American Chemical Society in order to promote better understanding between consumers and producers. The personnel of the Dutch East Indies committee is as follows: W. T. L. ten Broeck, The Goodyear Rubber Plantations Co.; W. E. Cake, Hollandsch-Amerikaansche Plantage Mij.; L. R. van Dillen, A. V. R. O. S. Proefstation, secretary; Th. G. E. Hoedt, West-Java Proefstation; H. van der Meyden, Rubber Cultuur Mij. Amsterdam, chairman.

In the report to the division at Akron the committee discussed a crude rubber testing recipe, but did not make it a part of the formal report. This recipe is now presented as follows:

Tentative Standard Testing Recipe

(Variability in curing properties)

Rubber	100.0
Zinc oxide	6.0
Sulphur	3.5
Stearic acid	0.5
Mercaptobenzothiazole	0.5

Cure: 20, 30, 40, 60, 80 minutes at 260° F.

The testing procedure to be followed is that outlined by the American Society for Testing Materials, Committee D-11 (on rubber products). Tensile at break, elongation, and modulus at 500, 600, and 700% may be reported. The committee requests that this procedure be checked through the various laboratories and criticisms submitted to the committee. This same request was made at the division meeting in Akron in October, 1935, but no comments have been received from members of the division. As a result, the committee feels that the members do not disagree with the formula as presented.

In all probability it will not be necessary to run all the cures for control purposes. The number of cures run by any given laboratory will depend upon individual preference. The committee will be pleased to receive recommendations from various organizations regarding limitations on the number of cures. Since it is obvious that if sufficient information for control purposes can be obtained by running only part of the cures, it is a waste of time and money to run the entire series.

A table accompanies this report showing data on 32 different lots of No. 1 ribbed smoked sheets run according to the above specifications. A study of this table indicates very clearly large differences in crude rubber as far as curing properties are concerned. The lots in the table are arranged in order of modulus at 600% on the 40 minutes at 260° cure for convenience. The committee has available a large amount of additional data on the proposed recipe, as well as on various other recipes, but it has been decided

[1] Given at Kansas City meeting. Reprinted from *Ind. Eng. Chem.*, News Ed., June 10, 1936, pp 215-16.

No. 1 Ribbed Smoked Sheets Tested in Crude Rubber Committee's Tentative Recipe

Arranged in order of modulus at 600% on the 40 minutes at 260° cure

Sample	20 Minutes at 260° F. T. S.*	Elong.	500†	600‡	700§
58	150	900	Not recorded		
50	500	1000	Not recorded		
52	500	975	Not recorded		
60	700	1060	Not recorded		
48	1600	940	175	300	500
49	1925	900	200	350	650
61	1750	960	200	325	525
39	2200	985	200	375	700
46	1850	900	200	400	750
37	2300	920	250	400	775
63	2000	900	250	450	800
38	2500	930	225	400	825
55	2000	900	250	400	800
69	1750	850	300	500	925
64	2300	930	250	475	900
70	1800	880	225	400	800
47	2300	900	250	475	100
44	2400	890	300	450	700
68	2300	860	325	625	1200
51	2600	870	300	575	1125
59	2075	880	300	475	900
43	2700	965	350	675	1300
57	2100	875	300	525	975
56	2550	860	375	700	1350
66	2450	875	250	500	1000
45	2450	865	375	650	1175
54	2450	835	375	700	1300
62	2475	820	425	850	1475
65	2750	800	425	900	1650
27	2875	805	475	900	1750
53	3200	855	400	800	1525
67	2650	835	400	800	1400
Average	2060	895			

Sample	30 Minutes at 260° F. T. S.*	Elong.	500†	600‡	700§
58	1500	925	150	300	500
50	1675	935	200	325	525
52	1700	930	150	300	500
60	2000	925	250	400	700
48	2100	900	300	500	900
49	2400	910	300	500	950
61	2550	900	300	500	900
39	2500	890	300	550	1000
46	2700	895	300	550	1100
37	3000	895	300	425	1200
63	2400	885	350	600	1100
38	2850	865	325	600	1275
55	2550	875	325	650	1250
69	2175	870	300	500	1025
64	2450	840	375	650	1275
70	2175	810	325	600	1175
47	2875	880	300	600	1225
44	2800	870	375	625	1200
68	2600	830	400	800	1425
51	3100	845	375	725	1450
59	2650	845	400	750	1400
43	3150	840	400	800	1500
57	2575	810	425	825	1550
56	3050	815	450	900	1750
66	2950	800	400	875	1725
45	3100	845	500	925	1675
54	2925	800	500	1025	1850
62	2525	765	600	1150	1925
65	3025	775	550	1100	2050
27	3150	795	550	1075	2050
53	3500	825	475	1000	1975
67	3000	790	600	1150	2000
Average	2620	855	370	700	1315

Sample	40 Minutes at 260° F. T. S.*	Elong.	500†	600‡	700§
58	1850	915	200	350	675
50	1800	875	300	425	800
52	2000	870	250	425	800
60	2400	880	275	500	1000
48	2450	845	325	600	1200
49	2550	890	325	600	1100
61	2750	855	350	650	1325
39	2750	850	350	650	1275
46	2800	860	325	675	1350
37	2775	845	350	675	1375
63	2600	850	400	700	1300
38	3100	845	350	700	1500
55	2750	825	400	750	1400
69	2450	800	400	775	1500
64	2000	835	450	774	1475
70	2550	810	400	800	1625
47	3200	850	400	800	1500
44	3125	845	425	800	1500
68	2875	810	450	850	1650
51	3250	825	425	850	1650
59	2900	800	500	900	1725
43	3600	840	500	900	1850
57	2575	780	500	950	1725
56	3100	810	500	975	1800
66	3200	785	475	1025	2025
45	3250	820	550	1050	1850
54	3000	800	550	1075	2000
62	3150	790	575	1100	2125
65	3200	765	600	1200	2250
27	3450	790	625	1225	2250
53	3375	770	600	1275	2500
67	3000	750	625	1325	2275
Average	2820	830	435	825	1575

Sample	60 Minutes at 260° F. T. S.*	Elong.	500†	600‡	700§
58	2550	900	300	500	975
50	2600	865	325	525	1075
52	2500	870	300	500	1000
60	2875	850	400	700	1300
48	2625	825	350	675	1300
49	2650	860	325	600	1275
61	3200	850	400	800	1575
39	3100	840	400	750	1550
46	3300	880	350	750	1550
37	3200	830	400	700	1500
63	3300	850	450	800	1500
38	3550	840	425	875	1775
55	3250	830	425	700	1500
69	2800	785	500	925	1775
64	3000	825	450	825	1700
70	2950	790	500	1000	1925
47	3325	845	425	900	1775
44	3450	830	475	900	1775
68	3100	800	550	1100	2050
51	3375	830	425	875	1750
59	2775	760	575	1075	2050
43	3450	790	575	1100	2100
57	3225	800	525	1050	2000
56	3450	790	550	1100	2125
66	3300	770	550	1175	2300
45	3500	800	650	1250	2150
54	3425	800	650	1225	2325
62	3450	790	650	1275	2325
65	3450	770	650	1300	2500
27	3725	785	700	1425	2700
53	3800	795	650	1350	2600
67	3475	755	750	1500	2675
Average	3180	820	490	945	1785

Sample	80 Minutes at 260° F. T. S.*	Elong.	500†	600‡	700§
58	2750	875	300	575	1175
50	2900	855	375	650	1250
52	2700	860	325	575	1150
60	3300	875	400	750	1400
48	3000	830	400	800	1525
49	3100	865	400	750	1450
61	3350	840	425	800	1575
39	3400	855	450	850	1650
46	3175	840	400	800	1600
37	3400	830	450	875	1750
63	2900	835	450	800	1500
38	3100	800	450	950	1900
55	3050	800	550	1050	2050
69	3100	785	550	1025	1900
64	3275	845	500	925	1875
70	3200	800	550	1050	2025
47	3300	800	500	1000	1975
44	3325	815	550	1050	1900
68	3350	790	600	1200	2200
51	3325	800	500	1025	2025
59	3400	870	600	1100	2000
43	3350	785	600	1200	2325
57	3400	800	550	1100	2050
56	3600	800	600	1200	2375
66	3500	770	600	1250	2400
45	3650	800	700	1275	2425
54	3575	790	700	1400	2500
62	3300	765	650	1300	2450
65	3350	760	600	1250	2425
27	3250	720	800	1600	2950
53	3800	775	700	1400	2900
67	3275	725	800	1575	2825
Average	3265	810	535	1015	1985

*Tensile strength expressed as pounds per square inch.
†Modulus at 500%.
‡Modulus at 600%.
§Modulus at 700%.

that publication should be limited to that information included in the attached table.

In addition to the recipe, the committee has prepared tentative specifications for sulphur, zinc oxide, mercaptobenzothiazole, and stearic acid to be used in the tentative recipe. The specifications as set up will permit the use of standard materials available on the market.

Sulphur (Natural Product)

Fineness. 100% through 100-mesh screen
Moisture. Not over 0.25% (2 hours at 105° C.)
Acidity. Not over 0.01% (as H_2SO_4)
Ash. Not over 0.10%
Purity. Not less than 99.5% sol. in CS_2

Zinc Oxide

Free from grit
Fineness. 100% through 100 mesh; 99.85% through 300 mesh.
Moisture. Not over 0.40% (2 hours at 105° C.)
Specific Gravity. 5.60 to 5.65.
Lead. Not over 0.10% (as PbO)
Copper. Not over 0.001%
Manganese. Not over 0.003%
Sulphur. Not over 0.25% (SO_3)
99.75% soluble in 10% acetic acid solution

Mercaptobenzothiazole

Purity. Not less than 91% mercaptobenzothiazole (titration with alkali)
Fineness. 100% through 100 mesh
Melting Point. Minimum 165° C.
Ash. Not over 0.50%
Heating Loss. Not over 1.00% (2 hours at 105° C.)

Stearic Acid

Double pressed from animal fat
Titer. Not less than 52° C.
Acid Number. 185 to 200
Iodine Number. Not over 10

The committee feels that the reports and discussions at the New York and Akron meetings of the Division of Rubber Chemistry, in addition to the information contained in this report, are sufficient as far as presenting the problem of variability in curing properties of rubber to the producers is concerned. For the time being, at least, all that the committee can do is to continue to coöperate with the producers' technical organizations, as any improvements that may be made must result from the efforts of the producers.

Several other items have been presented for consideration. These include aging, plasticity, packaging, cleanliness, etc. All of these items have been given consideration by the committee, but no definite recommendations are ready. A brief résumé of the situation on each is given.

Each of the committee members will study the aging data available and methods used in his own particular laboratory. The information from each of the laboratories is to be checked by all committee members, and from the data secured a definite program will be outlined.

Before any definite report can be made on the subject of plasticity, it will be necessary to make a very careful survey of the various methods of determining plasticity now in use. A definite fundamental starting basis will have to be determined and unanimous agreement, among the committee members at least, obtained upon what properties should be studied in determining

plasticity before recommendations to the division can be made.

The committee can do very little in the matter of cleanliness except to urge that the entire industry insist upon receiving a uniformly clean product. We know definitely from our contacts with the Far East that this item is being given considerable attention on the plantations.

As far as packaging is concerned, very little can be done owing to the present system of marketing rubber. One statement, however, can be made: namely, that bales are preferable to cases as far as cleanliness is concerned.

The committee is checking the general situation on latex and may find it advisable to study certain phases, but is not in position to report any progress.

Since the committee is operating without funds, the amount of work done must be limited and the time consumed will be considerable, involving years rather than months. The problems investigated must be broad and general, involving the industry as a whole. Specific problems dealing with some particular branch of the industry cannot be considered.

The committee wishes to express its appreciation to those who have offered to assist and to urge that other members of the division submit any available data concerning the various problems under consideration. The committee in particular wishes to express its appreciation to the organizations and individuals on the producing side who have offered to cooperate with it.

E. B. Babcock Harold Gray, *Chairman*
W. A. Gibbons G. A. Sackett
J. C. Walton
Crude Rubber Committee

Compounding Dept., Tire Div.
The B. F. Goodrich Co.
Akron, Ohio

Los Angeles Group

THE Los Angeles Group, Rubber Division, A. C. S., holds scheduled meetings the first Tuesday in the month from October to May, inclusive, and summer outings as well. This year the group held a mid-summer golf tournament at the Montebello Golf Club, July 11. The event was actively contested by numerous entrants, and prizes were awarded as follows: Group Cup, James Stull, of Santa-Fé Rubber Mills, for a low of 61; first blind bogy, E. G. Brooks, of California Golf Products Co.; second blind bogy, B. E. Dougherty, of B. E. Dougherty Co. The committee of arrangements was composed of Howard Hummer, of Xylos Rubber Co., and M. Montgomery, of Martin-Hoyte & Milan Co. The latter, incidentally, recently returned from a vacation trip to the Hawaiian Islands.

The first annual fishing trip of the group took place July 26, when 34 members aboard the Diesel powered boats *J. B.* and the *Aztec* spent the day angling in Mexican waters where tuna, albacore, and yellow tail abound, averaging 20 to 30 pounds each. A total of 17 prizes were awarded consisting of $10 cash for the largest fish caught on each boat and by the group. Other individual prizes awarded included rods, reels, flashlights, knives, etc. The outing was voted a grand success, and Edw. L. Royal, of H. M. Royal Co., chairman of the program committee, merits much credit for his effective management of the occasion. Moving pictures of the affair were taken and will be shown at the October meeting of the group.

Akron Group Outing

REPORTS of the recent annual outing of the Akron Group, Rubber Division, A. C. S., heard on every hand indicate the occasion was the most successul yet enjoyed. The "Oasis," presided over by Ferd Bonstedt, proved a very popular spot out on the fairway during the golf tournament. Vernon Smithers and Bert Taylor at the loud speaker at No. 1 tee gave the golfers important last-minute instructions on stance, hazards, and other pertinent details, much of which failed to register with many of the golfers, indicating that they were unaccustomed to taking orders. Bainbridge made the longest drive; C. Hahn was conceded the best driver with a putter; while M. J. Deibel made the best approach on No. 17. Several others in the tournament earned prizes for their efforts.

About 250 members and guests were served an excellent dinner at which each person was presented with a fine briar pipe by Godfrey L. Cabot, Inc. Eighty or more prizes were given out to holders of lucky numbers drawn from a hat. These worthwhile gifts were notable for their great variety, beauty, and utility, such as chromium plated cocktail sets, lamps, duffel bags, Gladstone bags, smoking stands, and other valuable articles and souvenirs of the occasion. An excellent German band supplied music for the affair.

A. K. Thayer and Jack van der Heidt served as photographers and were busy picturing contenders in the various sports and games of the day and evening. Some of their subjects are recognizable in the published group.

1936 A.S.T.M. Meeting

With its record breaking attendance the 1936 (thirty-ninth) annual meeting of the American Society for Testing Materials, held in Atlantic City, June 29 to July 3, was an outstanding one. The registered attendance was 1,131.

It was announced that the 1937 annual meeting will be held in New York, N. Y., at the Waldorf-Astoria, June 28 to July 2, and that the Fourth Exhibit of Testing Apparatus and Related Equipment will be sponsored in conjunction with this meeting. Only one annual meeting has been held in New York, in 1912. The Society held its 1933 Regional Meeting and Committee Week there.

Pontex

A new product under the trade name of Pontex, from a latex-saturated paper base, designed primarily for use in the manufacture of shoes, is announced by the Fabrikoid Division of E. I. du Pont de Nemours & Co., Inc., Newburgh, N. Y. After being practically tested as innersoles, midsoles, and sock lining by shoe manufacturers reports of its performance satisfy the rigid standards set up by these makers for their shoes.

It is pliable, tough, waterproof, and uniform in thickness, and cuts economically in plant operation, cutting cleanly without a ragged edge.

This new material is desirable for packaging where rough handling is a consideration or where waterproof material is desired. It has also potential use in the automotive field for panel boards, collapsible top boots, and anti-squeak packing.

Among Those Present at the Akron Group Picnic (*Left to Right*): Ferd Bonstedt, of Binney & Smith, Tries Some Free Beer; Busenberg, of Philadelphia Rubber, Painter, Semler, and Cartilage, all of Midwest Rubber Reclaiming, and John Barleycorn; John Herron, of Herron & Meyer, Telling What Must Be a Fish Story; Bob Casey and Ed Nahm, Both of Naugatuck Chemical, Caught in a Playful Moment; Carl Wright, Vice President, General Atlas Carbon, Is Well Pleased with Proceedings.

New Machines and Appliances

Short Hose Machines

TWO machines are pictured embodying improved features which facilitate control and promote ease of operation of machines for making, covering, and wrapping air brake and radiator hose. The machine at the right is the making and covering machine, and the one at the left is the wrapping machine. After the friction stock is applied to the inner lining of the hose and the outside cover stock and brands or trade marks are applied in the making and covering machine, the mandrel and hose are transferred to the wrapping machine. In this machine the wrapping is removed from the cured hose and simultaneously applied to a piece of uncured hose. A continuous spray of water is directed on the wrapper as it passes from the cured to the uncured hose. Excess water drops into a cast-iron pan under the rolls and is carried away by pipe connected to the pan.

In both machines the lower rolls are driven by multi-V-belt from a 3 h.p. geared motor mounted under the machine. The connecting gears of the lower rolls are machine cut. Gears and belts are fully guarded. The top roll revolves by contact with the hose as it is rotated by the two lower rolls. Pressure is applied to the top roll by compressed air, providing substantial, constant, and even pressure, which results in a tightly wound and uniformly wrapped hose. Air pressure also raises the roll to its top or open position, thereby eliminating counterweights.

Electro-pneumatic control of the roll operating mechanism, actuated by a foot operated air valve and interconnected with the driving motor, facilitates control by providing automatic starting or stopping of the machine. The motor is equipped with a fully enclosed disk-type solenoid brake.

The usual unit consists of one combination making and covering machine and one wrapping machine as shown in the illustration. These machines are designed to handle the standard sizes of hose, 1⅛- and 1⅜-inch inside diameter and 22 to 24 inches in length, but they can also be arranged for other sizes. Farrel-Birmingham Co., Inc., Ansonia, Conn.

Ideal Electric Marker

THIS new and inexpensive portable tool will mark on practically any material and would have much use in a rubber factory. Legible and permanent records can be quickly, easily, and safely made on all metals and their alloys, on dies, tools, plates, sheets, shapes, rods, forgings, castings, pipes, equipment, and also on glass, pottery, ceramics, hard rubber, bakelite, plastics, fiber, and similar materials. Its uses include: writing owner's name on tools or equipment to prevent theft; writing manufacturer's name, price, stock number or trade name on name plates, glassware, test tubes, and other products; identifying parts in store rooms; writing company name, sizes, etc., on tools in the tool room.

The instrument is handsize, 6¾ inches overall, weighs two pounds, and is as easily handled as a pencil or crayon. It requires no cabinet, auxiliary controls, rheostats, or transformer for operation. The point does not stick into the marking surface. It makes permanent lines, cut right into the surface, that cannot be removed by ordinary wear and tear of handling.

The marker operates on 110-volt 60-cycle A.C. and consumes approximately 75 watts. It can also be furnished for other standard voltages and frequencies. The unit comes complete and ready to use, has a six-foot cord with plug and on-off switch. Each marker is regularly supplied with a hardened point for working on all materials including hard steel or similar products. Ideal Commutator Dresser Co.

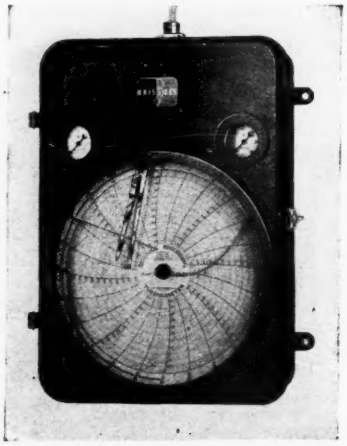
Portable Tool for Marking Materials

Free-Vane Controller

A NEW line of controllers for temperature, time-temperature, flow, liquid level, pressure, time-pressure, and humidity is announced. Known as Master Free-Vane Controllers, they are offered primarily for applications where a greatly reduced sensitivity, wide throttling range, is required, and the load conditions fluctuate over a wide range. The device is a pneumatic-type controller operating on Free-Vane principle of control.

In the Master Free-Vane Controller the basic Free-Vane system is equipped with a sensitivity adjustment, an automatic reset, and accessory features which minimize hunting; prevent departure from the control setting; make it possible to reach a new control setting without over-shooting, to adjust the anticipatory effect to fit the process lag; and to adjust the resetting mechanism to function in an amount pro-

Farrel-Birmingham A.B. and Radiator Hose Improved Machines



Bristol Master Free-Vane Controller

portional to the rate of change in the process.

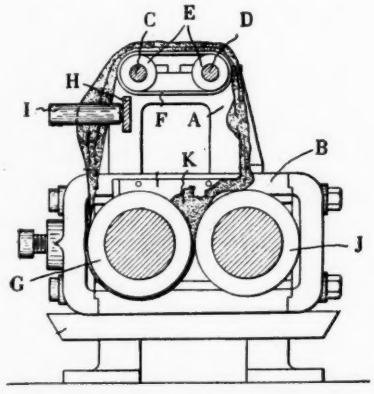
This controller is offered primarily to take care of more severe conditions encountered in processes, such as sudden load changes, over-shooting, etc. It is designed to compensate automatically for each of the disturbing elements in industrial processes that, from time to time, have a tendency to upset the true function of the control system. Also it makes possible obtaining precision control on extremely difficult applications without assistance from the operator. Moreover it is a self-contained instrument of quite simple design with all parts contained in one case. The Bristol Co., Waterbury, Conn.

Rubber Blending Mill [1]

BLENDING together batches of rubber is facilitated by means of a device applied and operated in connection with an ordinary mixing mill, as indicated in the sketch which represents a vertical section of the mill combination. Mounted in bearings supported in brackets *A* attached to the mill frame *B* are shafts *C* and *D* carrying pulleys *E* which support an endless conveyer belt *F*. The shaft *C* is operated by sprocket chain connection with the hub of one of the mill rolls. The surface speed of the conveyer belt is about 2 to 3% greater than the surface speed of the front mill roll *G*. Secured to a cross-bar *H* is a pair of spaced freely rotatable rolls *I*.

In operation, after a relatively large bank composed of master and regular batches has been worked on the mill sufficiently to form a sleeve about the forward roll *G* the operator makes a quick cut completely across the sleeve. The corners of the sheet are folded sufficiently to permit the operator to pass the folded portion up between the vertical rollers on to the belt *F* which carries the sheet over the rolls *C* and *D* and allows the sheet to pass downward to the rear mill roll *J*, thereby returning it to the bank *K*. The vertical rolls are so arranged that they cause continuous folding of the edge portions of the sheet as it is passed from the roll *G* up to the conveyer belt, thus transversely condensing the sheet. The surface speed of the conveyer belt can be the same as that of the front mill roll, but to insure faster blending of the mix it is advisable to increase the surface speed of the conveyer belt so it will return the strip of rubber to the bank at a slightly faster rate than it is being taken off the front roll. This gives the strip a sideways weaving action as it is returned to the bank, thus maintaining the bank along the entire length of the mill roll. There is thus produced a continuous blending and interfolding of a large amount of stock without any extended travel of the stock from the mill, thus minimizing temperature and other changes in the stock during milling. This arrangement gives a very uniform condition, together with a small rolling bank, which is automatically maintained without any substantial amount of attention from the operator once the operation is started.

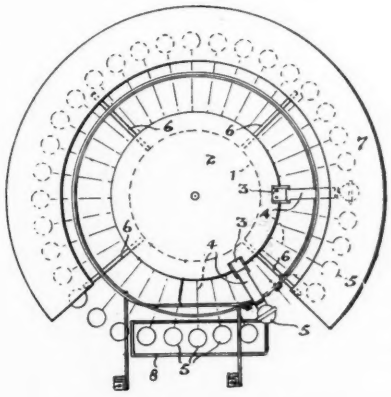
[1] U. S. patent No. 2,011,685, Aug. 20, 1935.



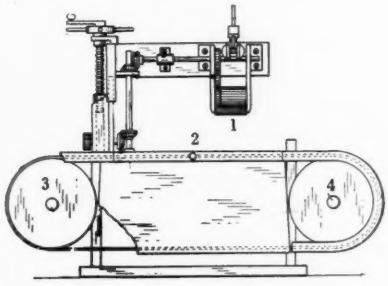
Mill for Blending Rubber Mixings

Machine for Molding Hollow Rubber Articles [1]

A DIAGRAMMATIC plan view of this machine is shown illustrating the radial arrangement of molds. In the structure a cylindrical base 1 has rotatably mounted thereon a circular member 2, upon the top of which are mounted a plurality of hinge brackets 3 arranged at the perimeter, and upon these hinge brackets are mounted the arms 4 that carry at the outer ends the molds 5 which are of a suitable design and construction preferably formed in half sections to be readily opened and closed.



For Making Hollow Molded Goods



Device to Cut Tread from Tire

A plurality of radial brackets 6 are rigidly secured to the vertical wall of the cylindrical base 1, and upon the outer ends of these brackets is mounted a heat chamber 7 here shown substantially rectangular in cross-section and of angular form and having a sector face formed therein, between the ends of which is arranged a cooling trough 8 into which the molds are dipped.

[1] U. S. patent No. 2,027,634, Jan. 14, 1936.

Tire Tread Splitter [1]

THIS apparatus is designed to cut the tread from a pneumatic tire while maintaining the casing in circular shape. The arrangement is such that a tire casing positioned around the bracket supported gear and roller mechanism 1 may be lowered and revolved under pressure against the bed 2. In that position the tread is removed from the casing by a band knife running around pulleys 3 and 4.

[1] U. S. patent No. 2,023,575, Dec. 10, 1935.

Plastic Extruder [1]

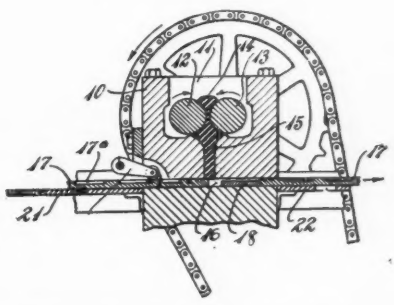
IT IS the purpose of this invention to provide means for feeding molds in succession and for regulating the extrusion of plastic material into them.

Referring to the drawing, the numeral *10* designates the frame of the extrusion device which is formed with a feeding chamber *11* in which a pair of cooperating feed rolls *12, 13*, are rotatably mounted. The plastic material *14* is forced by the rotation of these rolls through a passage *15*. A mold passage *16* intersects the passage *15* and the molds *17* are passed therethrough by a conveyer having drag bars *18* which push the molds past the passage *15*, where the cavities *17a* in the upper faces of the molds are filled as they travel through the passage *16*.

The conveyer comprises a pair of endless chains, driven by suitable sprockets (not shown). The drag bars *18* extend from chain to chain at such intervals as to permit a mold to lie between two drag bars. The molds slide along tables *21, 22*, level with the bottom of the passage *16*, and the drag bars *18* are formed with widened ends carrying rollers which engage rails at each edge of the tables. Timed feed of

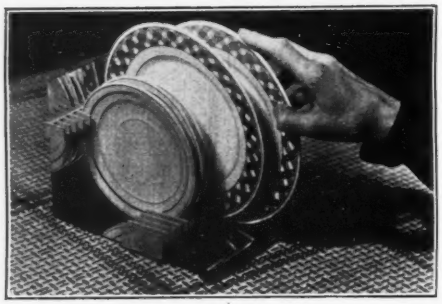
[1] U. S. patent No. 2,028,044, Jan. 14, 1936.

(*Continued on page* 62)



Extruding Apparatus for Plastics

New Goods and Specialties



Rubber Mounted Dish Rack

Dish Rack

THIS rubber mounted dish rack is a welcome aid in caring for china in a cupboard without danger of nicking or chipping caused by promiscuous piling. The rubber mountings that hold the dishes in an upright position are slidable to various positions making it possible to accommodate any size of plate with safety and is conveniently accessible as well. Its utility and convenience will be especially appreciated for the safe storage of fine china plates and saucers. Allen P. Child.

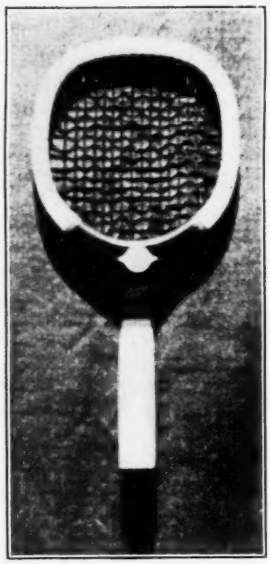
Rubber String Racket

A NEW and very fast game called Timpe is played with ball and racket over a net after the manner of tennis. Its speed is derived chiefly from the special round rubber cord used in stringing the racket. The cord is similar in diameter to the gut string of a tennis racket, but has greater resiliency and is much more durable. Oxidation of the rubber string is practically eliminated for at least a year by treatment with a chemical solution. A similar string has also been developed for badminton. Jack Schaefer, Inc.

Bib Washer

A WORTHWHILE change is noted in an improved faucet washer. The improvement consists in molding the rubber seat on to a thin metal back having a centrally located loose brass eyelet instead of a plain hole as in the ordinary bib washer. This construction admits of easily attaching the washer for service, effected by pushing a flat brass cotter pin through the eyelet and pushing it to place in the screw hole of the faucet base instead of fastening it there by a screw as is done in the case of the common plain washer. The improved washer is called the **"Easy-Tach."** It is put up with six washers and four patented washer holders on a display card. Keystone Brass & Rubber Co.

"Easy-Tach" Bib Washer



Rubber Laced Racket

Duplex Hose

New Duplex Hose

SUPERO SIAMEEZ rubber tubing, a new product of the Electric Hose & Rubber Co., is especially designed for welding equipment and similar services. Twin hose are simultaneously molded with a connecting web between them so that a cross-section resembles a figure 8. A special cord-wound reenforcement between the first and second braid gives a high burst limit and permits the use of differing pressures in each side without torque or writhing.

The DH Midget De Luxe Racer

Aerocycles

THE world's newest development in pedal driven sports vehicles, these little cars are not toys. They provide a new form of locomotion, affording physical exercise or athletic sport for young and old. The DH Midget is said to be the first and only pedal driven sports vehicle combining outdoor exercise with comfort and real utility.

DH Aerocycles are built in two models: the Standard Polo, that might be compared directly with the bicycle; and the De Luxe Model A-2, which carries a complete equipment of two-speed gear, fenders, electric head, tail lamps, and horn, speedometer, and streamlined drive mechanism cover. Both models are constructed on a welded steel tubular frame, designed to carry a 300-pound load and enamel finished. The drive mechanism consists of a crank, coaster brake, and differential, which actuates the front wheels. The Standard models have a one-speed crank; while the De Luxe are equipped with a two-speed sliding gear transmission. The steering mechanism, which controls the rear wheel, is of aircraft construction, cable controlled, with a 12-inch steering wheel and column, mounted ahead of the driver and adjustable fore and aft. The crank assembly is also adjustable fore and aft 14 inches, making the vehicle adaptable to any rider from 9 to 90. Wheel and tire equipment is of the Goodyear airwheel type, 12- by 3.50-inch tires on the Standard and 16- by 4-inch on the De Luxe. The disk wheels are finished in bright red enamel.

This combination of units produces a vehicle with all the advantages of its predecessors plus the many new modern features not obtainable in other types. It is ruggedly built to last a lifetime, yet has ease of propulsion making possible speeds up to 30 m.p.h. Its uses are almost universal, as juvenile sports, Aerocycle Polo, light delivery, and adult exerciser. Aerocycle Co.

Rubber Industry in America

OBITUARY

H. O. Phillips

A SUDDEN attack of angina pectoris caused the death, on July 13, of Herbert O. Phillips, who had enjoyed an unusually long and successful career in the rubber industry. This began in 1885 when, after acquiring knowledge of wire manufacturing with a Waterbury, Conn., concern, he and his brother, the late Edgar B. Phillips, founded the modest enterprise E. B. Phillips & Co., Central Falls, R. I., which developed into the highly profitable Phillips Wire Co., Pawtucket, R. I., absorbed in 1925 by the General Cable Co. After then severing connections with the company he had started and of which he had been treasurer and a director, H. O. Phillips became a heavy stockholder in the Stedman Rubber Flooring Co., South Braintree, and the Appleton Rubber Co., Franklin, both in Mass., and was president and a director of both concerns at the time of his death. He had also served as head of the Davis-Jones Insulated Wire Co., Phillipsdale, R. I., of Taunton Rubber Co., Taunton, Mass., and of Pettingell-Andrews Co., Boston, Mass., and had been financially interested in the Crown Mfg. Co., Royal Weaving Co., and Collyer Insulated Wire Co., all of Pawtucket, and had held stock in many other firms. Besides he had been a director of the Industrial Trust Co. and of the Rhode Island Hospital Trust Co., both of Providence, R. I., as well as a member of the board of managers of the latter's branch in Pawtucket. Mr. Phillips, who was born in Providence on April 19, 1858, and started life without means, died a multimillionaire.

Among his clubs were the Turks Head, Martha's Vineyard Country, and To Kalon, of which he had been president seventeen years.

Surviving are the second Mrs. Phillips, divorced last year, three daughters, a brother, and two sisters.

Funeral services were conducted at Pawtucket on July 16, and interment was in Swan Point Cemetery.

Frank H. Albee

FRANK HERBERT ALBEE, who died at his home in Hyde Park, Mass., July 5, began his long association with the rubber industry in 1897 when he went to work for the Boston Woven Hose & Rubber Co., Cambridge, Mass. Mr. Albee, however, joined The Acme Rubber Mfg. Co., Trenton, N. J., in 1901, the date of its inception, as assistant manager of its

Bachrach

Frank H. Albee

Boston, Mass., store, and in 1919 became New England manager, opening new offices at 134 Summer St., Boston. He was also the first one to market the high-pressure spray hose and invented the Albee Kant-Slip patented coupling used throughout the United States.

The deceased was born in Gloucester, Mass., June 3, 1880. He attended Hyde Park schools and a Boston business college.

Mr. Albee was well known as a yachtsman and a horseman. Among the organizations to which he belonged are Hyde Park Lodge A. F. & A. M.; Cyprus Commandery, Blue Lodge and the Aleppo Temple, Mystic Shrine; Massachusetts State Foresters and Tree Wardens' and Cape Cod Cranberry associations; and Quincy Yacht Club.

Surviving are his wife, a sister, and two sons, Richard and Parker, who will continue the business of their father in representing the Acme company.

Funeral services were held at the Albee home on July 7. Burial was in Milton Cemetery.

F. N. Place

FRANK NOBLE PLACE, retired rubber executive, died June 14 after an eight-year illness. During his lifetime he had been connected with Ogg & Place, Metropolitan Rubber Co., and New York Clothing Co., all of New York, N. Y.

He was born in Brooklyn, N. Y., sixty-nine years ago. The deceased belonged to the Union League Club of Brooklyn and the Protestant Episcopal Church.

A widower without children, Mr. Place leaves two brothers, Howard and Charles A., both of whom also are identified with the rubber industry.

Funeral services were held June 16. Burial was in Cypress Hills Cemetery.

G. D. White II

ON JULY 20 George D. White, 2nd, manager of the retail stores of United States Rubber Products, Inc., with office at 675 Eleventh Ave., New York, N. Y., died from a sudden heart attack. Prior to joining U. S. Rubber in 1932 he had been president and a director of the White & McKenna Firestone Service Stores, Inc. During the World War he had served overseas as a sergeant in the United States Army Medical Corps.

Mr. White was born in Newark, N. Y., 44 years ago. He was educated at Rutgers Preparatory School and Pennsylvania State College (Class of 1915).

The deceased belonged to the Masonic order, Delta Upsilon fraternity, and New York Athletic Club.

He leaves his wife, his father, and a son.

Masonic funeral services were held July 23 at Rosehill Cemetery, Linden, N. J., where interment took place.

John M. Alderfer

AFTER several years of ill health John M. Alderfer, founder and president (1916-1928) of the India Tire & Rubber Co., Mogadore, O., of which he had been chairman of the board, also, from 1928 to 1932, died July 10. He was also a founder and a director of the Akron Rubber Reclaiming Co., Barberton, O., of which he later served as second vice president.

Mr. Alderfer, who was born in Western Star, O., 69 years ago, as a youth entered the lumber business with his father. In 1896 he began manufacturing wooden crates for shipping produce and later developed a very popular crate for shipping tires. This business was destroyed by fire in 1915, and the next year Mr. Alderfer with Paul Searles organized the India company. He was also prominent in the civic life of Akron and was particularly active in the First Methodist Church and the Y. M. C. A.

Surviving are his wife, a son, a daughter, a brother, and two sisters.

Funeral services were held July 13, and burial was in Wadsworth.

(*Continued on page* 58)

EASTERN AND SOUTHERN

WHILE drought conditions and the heat wave seriously curtailed business activity in many sections of the country recently, trade held up very well in other areas. With retailers preparing for one of the most active fall seasons in several years, sales soared in the major wholesale markets. Few changes were evident in the industrial field. Steel mill operations continued close to the peak for the year; while the cotton end of the textile industry showed further improvement.

Business has clearly given an exceptionally good account of its activities the first six months of 1936 despite the fact that all these fine figures are still depression figures. It seems probable that it will continue to do well in the second half of the year in spite of the prospective disputes of the political campaign, the looming possibilities of labor difficulties, and the widespread and serious droughts. This promises to be the best business year since 1930, and possibly since 1929.

Demand for machine tools remains heavy. Builders, still working to make deliveries on goods ordered in late spring, have enough orders on hand to insure operating on full schedules well into the fall. Calls for machine tools show no signs of lessening; on the contrary, leaders predict demand to increase steadily until mid-September at least. Requests for specially designed equipment are gaining more rapidly than those for staple items.

Office equipment sales, particularly for typewriters, also continue to increase sharply. A leading typewriter manufacturer has established a new sales record every month for the first half of 1936, with the increase for the period 40% above that of the corresponding period last year, when the company went well ahead of 1934, its previous record year.

Business is thriving in the rubber industries of Buffalo, N. Y. Improvement in general industrial conditions and development of new products have aided in raising output of the rubber factories to the highest level in recent years. Another prospect makes for a glowing picture there. With decentralization contemplated in Akron, manufacturers are eyeing Buffalo, which claims many advantages lacking in the Rubber City, as the cooling waters of Niagara River, cheaper electric current and freight rates, and Buffalo's excellent labor record with respect to freedom from major strikes.

Mid-June Pennsylvania factory payrolls were 2.4% higher than in mid-May; while employment increased 1.5%. The payroll index is 27% above that of a year ago, and the average weekly wage is the highest in six years. Iron, steel, transportation equipment, and lumber are largely responsible for the better showing. The hot weather stimulated trade at all department stores and specialty shops and on railroads, but is holding back the coal markets.

In the South despite the heat retail trade was very good, with results far ahead of 1935 figures. Crop conditions generally were greatly improved in most sections when much-needed rains fell. Farmers, though, feel much more rain is necessary to avoid additional damage to their plantings. Building and real estate continue brisk, especially in Atlanta, where a mild building boom is under way.

The Southwest reports industrial activity has materially increased the last few weeks. Unusual activity abounds in the textile industry. Several cotton mills have announced plans for improvements at considerable cost; while employment of operatives has risen. In general, too, marked improvement is reported in employment, with relief load constantly decreasing.

The ability of the rubber market to move irregularly upward is directly attributable to the continued improvement in the statistical position. United States rubber stocks have declined for 11 consecutive months, and consumption during April, May, and June exceeded the 50,000-ton mark. Briefly reviewing the statistical position, world stocks of rubber declined around 60,000 tons during the first four months of the year, and unquestionably a further decline will materialize during the balance of the year. Current stocks are under the average of the past four years, but it must be recognized that as compared with pre-depression and early depression years, stocks are around 100% higher. Therefore there is nothing critical in the present situation, and the International Rubber Regulation Committee is not anxious to stimulate prices at a rapid pace because only with the greatest difficulty will production and shipments be held within the allotted quotas.

Martin Rubber Co., Inc., Long Island City, N. Y., through President Walter L. Tepper, has announced the formation this year of the Martin Rubber Baseball Team, which, at time of writing, is in second place in the Long Island City Industrial League, having lost only one game. The nine would welcome a challenge from any rubber team in the East. A. Rossi is the team's manager.

Martin Rubber Baseball Team—Company President Walter L. Tepper in Center

General Atlas Carbon Co., 60 Wall St., New York, N. Y., has announced the resignation of T. Neil Wilder, for several years assistant to Vice President Carl J. Wright. Mr. Wilder has joined the advertising staff of Jones & Laughlin Steel Corp., Pittsburgh, Pa., manufacturer of light oil distillates and steel products.

Oscar Nelson, president, United Carbon Co., Charleston, W. Va., contributed to a recent issue of the New York *Journal of Commerce* an article, "New Carbon Black Types on Market" in which he sketched the progress of the carbon black industry from its earliest use prior to 1914 by the printing ink maker to its present utilization by a host of industries, especially rubber. The development of the gas black itself in its physical states is also touched upon, including the new type of dustless carbon black recently announced by the company.

General Tire & Rubber Co. has bought a plot on Vanderbilt and Atlantic Aves., Brooklyn, N. Y., which, after alterations at 805-807 Atlantic Ave. and the construction of a new building on the balance of the plot, will make the property the company's Brooklyn distributing and warehousing location.

Franklin Rubber Corp., which formerly operated at Doylestown, has resumed business in Philadelphia, both in Pa. The company is operating with two shifts in the manufacture of plumbers' rubber sundries and other products.

Vulcanized Rubber Co., Morrisville, Pa., reports that production is holding up very well and that it expects to operate normally the remainder of the season.

Hewitt Gutta-Percha Co., Kensington Ave., Buffalo, N. Y., today has about 450 employes on the payroll, the greatest number in years. As general business conditions have improved, the output of the plant, which includes conveyer belts and hose, has mounted to reach the present peak.

American Hard Rubber Co., 11 Mercer St., New York, N. Y., in view of the advantages possible from the World's Fair to be held in Flushing, L. I., and decentralization talks of manufacturers in Akron, O., where the company's main factory is located, is rumored to be contemplating reopening its plant at College Point, L. I., closed about four years ago when the company transferred activities to its Butler, N. J., factory. But much, it is held, depends on efforts now being made to unionize the rubber industry.

Texas Centennial Central Exposition

Visitors to the Texas Centennial Central Exposition at Dallas witness informative demonstrations of rubber factory machines engaged in the production of tires and inner tubes and the processes of vulcanization. They will learn, as well, much interesting information concerning carbon black, sulphur, and cotton, the supplies of which are largely produced in Texas and are vitally essential to industrial pursuits.

A phase of the Firestone exhibit in the Ford building depicts through the medium of factory machines and processes the combination of rubber with sulphur, known as vulcanization. Its prime importance in the production of satisfactory tires is demonstrated by example. Two rubber balloons are inflated to the bursting point; one is of vulcanized rubber and inflates much larger than the other, which is of unvulcanized material.

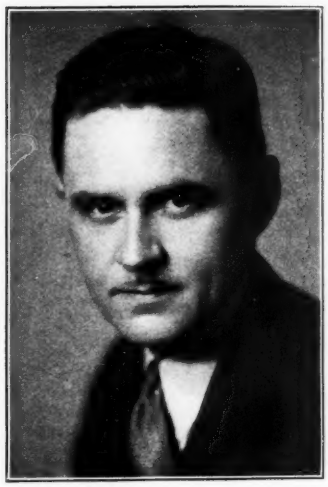
The actual production of sulphur is realistically portrayed in an exhibit by the Texas sulphur industries. This is an accurately scaled diorama, together with sidewall exhibits showing the varied uses of sulphur. The diorama shows the sulphur mining operation of forcing superheated water through pipes into the sulphur deposit. There it melts the formations, and the sulphur is forced to the surface through pipes. Thence it goes into block formations 40 feet high, 80 feet wide, and from 600 to 1,200 feet in length.

The use of carbon black in rubber production is also demonstrated in the Firestone exhibit. This demonstration is through the medium of two test plates of identical thickness. One is of steel; the other is a typical strip of tire tread. Both are submerged in water, and a sand blast directed against their surfaces. Visual demonstration is thus made of the fact that the steel plate wears away from the force of the sand blast while the carbon treated rubber plate shows no wear.

Texas yields 72% of the nation's total production of carbon black of which the rubber industry uses 52%. Production is confined chiefly to the Panhandle area of the state where natural gas is produced in great quantities.

The production of cotton is exhibited in the Hall of Agriculture. Here the visitor learns which areas are most productive. Here he sees demonstrations of all modern applications of machinery and exhaustive county agent tests. The successful meeting of the boll weevil hazard and other menaces to the cotton plantations is explained by chart, illustration, and example.

Cotton enters into the production of tires to an important extent, approximately 20% of the weight of a cord tire being in the cotton used. Cotton growing in Texas is a huge industry, averaging 3,000,000 bales a year. This figure and other comparative figures are used in the Firestone exhibit to show its close relation with the state's industrial side.



Blank & Stoller

Robert E. Casey

Sales Executive

Robert Ernest Casey, in charge of sales of rubber chemicals, reclaim, and rubber labels for Naugatuck Chemical, Division of United States Rubber Products, Inc., 1790 Broadway, New York, N. Y., has been with the company since 1922 when he joined it as a chemist. Four years later he was made technical salesman and recently was named to his present position. As traveling representative, "Bob" Casey, as he is widely known, covered New England, the East, Chicago, and the Midwest. For the past few years he has also been assistant to the firm's sales manager. From 1920 until his Naugatuck connection Mr. Casey served as a chemist with the Calco Chemical Co., Bound Brook, N. J.

He is a native of Richmond, Vt., where the senior Caseys blessed evented in 1899. Their son attended the public schools of Jericho, Vt., and the University of Vermont. He received his B.S. in chemistry in 1919. The year following his graduation was spent as an instructor in chemistry at his Alma Mater. He belongs to Phi Beta Kappa and Phi Mu Delta.

"Bob" Casey keeps a bachelor apartment at 365 W. 20th St., New York.

Kosmobile 66 and Dixiedensed 66

These brands of gas black are free flowing, offering superior advantages in clean handling and reducing to minimum the possibility of flying dust, in mixing with rubber on the mill. They are new types of dustless carbon of irregular shape, with a structure sufficiently strong to withstand handling, but of such texture as to insure immediate disintegration when subjected to the action of the Banbury and mill. Besides their dustless characteristics they have excellent processing and reenforcing properties for rubber compounding and are manufactured under rigid control to assure high uniformity in physical and chemical characteristics.

New York State Silicosis Legislation

The campaign designed eventually to eliminate silicosis as a major industrial disease hazard in New York State received its greatest impetus on June 6 when Gov. Herbert H. Lehman signed the following acts of the last Legislature:

Senate Introductory Number 1084, Printed Number 1878, entitled:

"AN ACT to amend the workmen's compensation law, in relation to occupational diseases and in relation to special provisions for compensation for certain injuries to the respiratory tract resulting from the inhalation of harmful dust, and to amend the labor law, in relation to control of harmful dust in public works."

Senate Introductory Number 1559, Printed Number 2063, entitled:

"AN ACT to amend the workmen's compensation law, in relation to authorizing the expenditure of moneys from the vocational rehabilitation fund for the purposes of making studies, and of disseminating information on the subject of the control and prevention of diseases caused by the inhalation of harmful dust."

Assembly Introductory Number 1356, Printed Number 1508, entitled:

"AN ACT making an appropriation to the department of labor for the prevention of silicosis and other dust diseases."

These laws became effective immediately.

Provision of New Law

Briefly, the outstanding features of this legislation are:

Provision for special and limited workmen's compensation to employes disabled by silicosis or other dust diseases.

Prohibiting so far as possible compulsory preemployment examinations of wage earners.

An allotment of $50,000 each year for five years to be spent for research studies on dust and other occupational diseases from the viewpoint of prevention, including the design of equipment, its operation, and studies on efficiency of apparatus in use.

Making mandatory the use of approved dust-eliminating devices and methods on all public works, including highways and construction both indoors and outdoors.

Directing the Industrial Commissioner and the Industrial Board to promulgate Industrial code rules and regulations for the effective control of silicosis and similar diseases in all industries and operations wherein silica dust and other harmful dust hazards are present.

Appropriation of $100,000 for administrative expenses and for employment of examining physicians and research consultants.

C. J. Tagliabue Mfg. Co., manufacturer of indicating, recording, and con-

(*Continued on page* 66)

NEW JERSEY

PRODUCTION of mechanical rubber goods remains good at most New Jersey plants; but hard rubber products declined in some sections. Orders for rubber cloth are holding up well; while manufacturers of footwear are filling their warehouses with goods for the coming winter. Some plants were compelled to close down a few days during the heat wave.

Jos. Stokes Rubber Co. is operating 24 hours a day at both its Trenton and Canadian plants. Milton H. Martindell, vice president and treasurer, accompanied by his family, is spending three weeks in Cuba. The trip is being made both for business and pleasure.

The Titanium Pigment Co.'s capacity for producing "Titanox A" (titanium dioxide) at its Sayreville, N. J., plant will be doubled when present expansion operations are completed. Machinery is being installed, buildings will be constructed to provide additional warehousing space, and officials of the company expect that by January, 1937, the plant will be able to produce twice as much of this pigment as it does now. The Sayreville plant, in operation since April, 1935, was so designed that additional operating units could be added with a minimum of expense for new construction. Plans are also being pushed to provide for a deeper channel in the Raritan River so that large-sized ocean-going vessels may dock cargoes of raw materials at the plant. Present channel depths limit the size of ocean carriers at the plant's dock.

The Triplewear Brake Lining Corp., Paterson, has instituted suit for $150,000 in Mercer Supreme Court at Trenton against the Thermoid Co., Trenton. Norman E. Heil, general manager, and William H. Heil, chief engineer, have joined the plaintiff in the suit. The complaint cites that a contract for the purchase of Triplewear's assets had not been carried out. The contract was signed last December, and included in the assets were 18 patents held by the Paterson firm. In addition secret processes as well as customer lists and good will were turned over, it is contended. The alleged breach of the contract has caused the dismantling of the Paterson plant; so it cannot be used to carry on business as heretofore, it is claimed. A number of officials and employes were discharged or left the firm's employ and are not available for the company to resume operations. The individual plaintiffs claim that the value of their shares has declined, and they have not been paid $13,411.77 due them from the corporate plaintiff. The Thermoid Co. has denied the charges and claims that the total price for the assets was figured at about $35,000.

Annual Safety Congress

National Safety Council will hold its Annual Safety Congress the week of October 5 at Atlantic City. The Rubber Section program is scheduled for October 6 and 7. Highlights of this event follow: Resumé of the section's activities and report of the 1936 contest, General Chairman A. M. Dietz; "Safe Solvents," Ralph Farnum, safety supervisor, United States Rubber Products, Inc., Detroit, Mich.; "How to Reach the Individual Worker on Safety," Urban L. Moler, personnel director, Inland Division, General Motors Corp., Dayton, O.; "Do We Have Occupational Disease Hazards in the Rubber Industry?" Dr. J. Newton Shirley, Watertown, Mass.; "Safety Kinks," W. H. MacKay, personnel director, Dunlop Tire & Rubber Corp., Buffalo, N. Y.; "Tie-up between Safety and Motion Study," illustrated with motion pictures, Wm. R. Mullee, standards engineer, American Hard Rubber Co., Butler, N. J.; "Safety from the General Manager's Point of View," Col. A. F. Townsend, chairman of the board of both Raybestos-Manhattan, Inc., Passaic, N. J., and The Rubber Manufacturers Association, Inc., New York. Election of officers will take place October 7.

Ernest W. Beck, supervisor of safety, U. S. Rubber, 1790 Broadway, New York, is chairman of the membership committee of the Rubber Section, N. S. C.

The Pierce-Roberts Rubber Co., Trenton, was compelled to close its plant for several days during the heat spell. The company is now operating normally.

The Continental Rubber Works, Erie, Pa., has instituted suit in the Federal Court of New Jersey against the Richardson Co., an Ohio corporation, with a plant in New Brunswick, N. J. The complainant charges the Richardson company with infringing on patent rights in rubber molding.

La Favorite Rubber Mfg. Co., Inc., manufacturer of patented packings and rubber specialties, Paterson, according to President C. R. Mastin, found the first half of 1936 the best of any similar period, from a point of sales, for at least the past five years. Although it takes larger volume of sales to approach a profit in keeping with earlier experience and lesser sales, the company, considering the experience of the past half-decade and the fact it has been able to operate continuously, feels optimistic. La Favorite, which was incorporated in 1896 and has its factories in Hawthorne, still functons under the regulations of the defunct NRA code. T. H. Mastin is treasurer of the concern, and George Winters is company secretary.

Thiokol Corp., Yardville, is operating normally. President Bevis Longstreth was on a lengthy western trip.

Puritan Rubber Co., Trenton, reports production remains good during the summer season.

Pocono Co., Trenton, finds business continuing good, with prospects favorable for the remainder of the season.

Whitehead Bros. Rubber Co., Trenton, which had been operating with two shifts, has added a third shift to keep up with orders. The concern announced its business has shown a bigger increase than in some time.

Luzerne Rubber Co., Trenton, reports a decline in hard rubber production.

The Richmond Tire Co., Trenton, was awarded a contract to furnish pneumatic tires to the State of New Jersey for the coming year at a cost of $35,000.

The Overman Cushion Tire Co., Belleville, was awarded a contract to supply solid tires for $4,000 for the State of New Jersey for the coming year.

Acme Rubber Mfg. Co., Trenton, through one of its officials, said: "Business has been keeping up remarkably well for mechanical goods. Our output has shown a large increase over last year, and we are optimistic over the future. If the drought in the west affects the crops it will mean less orders for the rubber industry."

The Lambertville Rubber Co., Lambertville, which was closed for two weeks to make necessary repairs and take inventory, has resumed operations. The concern expects to be busy the remainder of the summer.

The Thermoid Co., Trenton, held its annual outing July 11 at the Flemington State Fair Grounds and transported its employes and their families in the 25-mile ride in buses from Trenton. Several thousand were present and the day was spent in various kinds of games. Salesmen and sales managers from various parts of the United States, participating in the four-day conference at the company's office, attended the event. During the sales conference the representatives held a dinner at the Stacy-Trent Hotel, Trenton. The following awards were made at the outing: Achievement Awards: Harry Searfoss, purchasing agent; Frank Sharpe, vice president; and Bill Swain, division sales manager of Chicago office. Progress Awards: Walter Bauss, Russell Case, Sam Dennis, Lillian Donegan, Bill Holzer, Bill Harbourt, Dorothea Miskell, Elmer Reed, and Dave Sands. Service Awards: Fifty years, Harry Magowan; twenty-five years, Louis Ashton and Earl Hughes; twenty years, McKinley Brearley, Louis Patterson, and William Wood; fifteen years, Herman DeValliere.

OHIO

BUSINESS sentiment remains buoyant here although drought conditions grew worse in some places. The industrial field reveals few changes: steel mills continue close to the peak rate for the year; machine tool plants have received more orders than since 1929; foundries are quite active; automotive parts plants are operating somewhat below their peak, but demand for 1936 materials held up longer than expected.

Reports of more labor trouble in Akron are current with attempts to unionize rubber workers. It is believed by some authorities that this condition is partly responsible for the high levels of crude rubber consumption maintained the past months, with the finished product going into manufacturers' stocks instead of to consumers, in anticipation of any emergencies.

Until the heat waves descended on the nation replacement sales of automobile tires were very disappointing.

Goodyear Notes

P. W. Litchfield, president, Goodyear Tire & Rubber Co., Akron, announced July 16 that the contract whereby it manufactured special-brand tires for Sears, Roebuck & Co., Chicago, Ill., since 1926 has been terminated although it normally would have expired in 1942. But owing to the Robinson-Patman law, effective June 19, 1936, the terms of which are such that Goodyear was unable to fulfill the requirements of the contract. No sales have been made thereunder since the new law's enactment. Sears' requirements accounted for approximately 6% of Goodyear's annual business. Special-brand tires for Sears were made to the latter's specifications and sold at cost plus. Goodyear's present business as the largest tire manufacturer in the world was achieved long prior to the mail-order contract on the basis of independent dealer operation. Goodyear will now utilize for manufacture of its own brand lines of tires the production facilities heretofore absorbed by Sears' requirements. Through the continuation of aggressive sales and advertising efforts on dealer business, the company looks for a substantial increase in production and sale of Goodyear tires. The company's plants outside of Akron are practically unaffected as only a small part of the Sears' production was allocated to them. It is understood that the termination of the contract does not affect the company's appeal against the order issued in March, 1936, in respect of Goodyear's operations under the provision of the law prior to the passage of the new act.

Federal Judge Paul Jones returned judgment July 2 for $476,275 against Goodyear and in favor of the Overman Cushion Tire Co., which charged on July 1, 1935, that Goodyear had violated patent rights on a truck tire that contained a hole through the center, but was not inflated. It declared it had licensed the Kelly-Springfield Tire Co. to manufacture the tires and that Goodyear had no license.

A temporary order was issued July 17 by the District Supreme Court, restraining the National Labor Relations Board from holding a scheduled hearing July 21, on unfair labor practice charges made against the Goodyear company. Hearing on a company petition for a permanent injunction against the board was set for July 27.

General Tire News

General Tire & Rubber Co., Akron, stockholders recently approved change in par value of the common stock to $5 from $25, and increase in the authorized number shares to 500,000 from 100,000. Common stockholders will receive five shares of new stock for each share of old common. At the end of the last fiscal year 87,145 shares of $25 par common stock were outstanding. W. O'Neil, president, stated that the stock split-up authorized "will mean that a more stable market for the stock will result from the increased number of outstanding shares." Mr. O'Neil addressed a weekly luncheon of the Sales Executive Club of New York at Hotel Roosevelt, New York, on July 27.

The invitation by the club to Mr. O'Neil to address the gathering was prefaced with the remark, "We have much interest in the remarkable results you have had in selling quality and not price, and we think the story behind your ability in selling an idea has an inspiration for many sales officials."

The salient points of Mr. O'Neil's speech follow.

"Don't spend so much time fighting for business that is already created but create new, additional business. Increase the use of your product, open up new markets, satisfy new human needs and there will never be a saturation point for the goods you sell.

William O'Neil

"Take tires, for example. Occasionally, we are told that only so many tires can be used, but we believe that more tires can always be used, if they are used so that car owners get the maximum good out of them. When motorists are shown that safety, ease of riding, and real economy are more important than mere mileage, they want new things in a tire. It takes good engineers to build this sort of tire, but it means more business for the tire merchant, as well as greater safety, economy, and comfort for the person who drives. Clothing manufacturers realize this when they change styles to sell people more clothes so they will look and feel better, especially women.

"Too much emphasis is being placed today on the advantages of long-time credit and easy payments and the fundamental importance of quality in a product is in danger of being lost sight of. While time payments are an essential part of modern business, it is much more important to know how good an article is than how long one will be allowed to take to pay for it.

"Manufacturers today realize that they must protect their dealers by not subjecting them to too much inexperienced competition in their own lines. New outlets should be established slowly and carefully whenever there is conflict with present outlets."

Goodrich Activities

The directors of The B. F. Goodrich Co., Akron, July 21 approved the calling of a special stockholders' meeting to consider a plan recommended by the board for changing each of the issued and outstanding shares of its 7% cumulative preferred stock together with all rights pertaining thereto into 1.4 shares of a new preferred stock without par value and one-half share of common stock. The new preferred stock would entitle the holder to an annual $5.00 fixed preferential dividend cumulative from July 1, 1936. Dividends paid on this stock during the first two years may be in cash, in the new preferred stock, or partly in each.

The special meeting will be held at the office of the company, 230 Park Ave., New York, N. Y., at 10:30 a.m. on September 9. The record date to determine the stockholders entitled to notice of and to vote at this meeting has been fixed as July 31. Notice of the meeting giving complete details of the plan will be mailed on or about July 31 to all stockholders of record on that date.

To afford owners of the stock opportunity to receive this notice and to

vote at the meeting, the company urges that all owners of stock registered in the names of others transfer their stock into their own names prior to July 31. The company also requests those having stock registered in their names, but owned by someone else, to call this notice to the attention of the beneficial owners to enable them to transfer their stock into their own names so that they may vote their stock directly, if they so desire.

Goodrich, according to Gilbert Lane, will establish a tire manufacturing plant in its former rubber reclaiming factory at Oaks, Pa., closed in 1932. The new plant will begin operations in the fall, with 350 to 400 employes and a daily output of 400 tires.

Chester T. "Chet" Morledge has joined the sales staff of the Goodrich tire division. Mr. Morledge, former vice president in charge of sales of the India Tire Co., Mogadore, has been in the rubber industry since 1920, following his graduation from Heidelberg College, Tiffin. Born in Akron, he attended Central High School, was a star football player, and prominent in other athletic sports. His first connection with the rubber business was with the American Rubber & Tire Co., Akron, where he served in practically all departments, became assistant superintendent, and finally assistant sales manager before he joined the India company in 1926 as a salesman. Following a year in the field for India, he was made assistant sales manager in 1927, sales manager in 1930, and vice president in charge of sales in January, 1934.

George Oenslager, of the Goodrich research laboratories, known as "dean" of American rubber chemists, and W. I. Burt, superintendent of Mill 3 at Goodrich, were in England for the Chemical Engineering Congress in London, which began June 22, and joint meetings of the American Institute of Chemical Engineers and the British Institution of Chemical Engineers, which opened June 28. Messrs. Oenslager and Burt joined 200 members of the American Institute of Chemical Engineers making the trip abroad to attend the international meetings.

Evan J. Evans, believed dean of all rubber calender men from the standpoint of active continuous service in the industry, has retired and was placed on the Goodrich pension pay roll July 1. He started with the company January 10, 1891.

Thomas H. Clarke, with the Goodrich battery sales department since 1933, was named manager of battery sales, according to Guy Gundaker, Jr., manager of the automotive accessories department. Mr. Clarke, a veteran in the automobile battery business, was on the sales staff of Electric Storage Battery Co. 18 years before joining Goodrich.

Rubber at the Great Lakes Exposition

One of the most beautiful sights of the Great Lakes Exposition being held at Cleveland is the Firestone Tire & Rubber Co. exhibit with the famous Firestone Singing Color Fountain in the foreground. This fountain is located in the Firestone exhibit grounds which cover 2¾ acres. Six misty fountain domes rise majestically from a pool 120 feet long by 20 feet wide. The pool is in the center of a large parkway surrounded by flowers and a generous expanse of lawn. Here is truly an interpretation of music in color as the color of the fountains shooting their jeweled plumes of spray high into the air changes in perfect synchronization with the tonal variations of the music. In each of the six fountains a battery of colored lights automatically cause the water to change from red produced by the deep tones through many color tints of the rainbow to pastel shades of green and blue for the higher notes.

The Firestone Building, which frames the singing color fountain, is ultra-modern in its design and at night with its brilliant illumination complements the fountain and sign to produce a most beautiful and spectacular sight.

Among the many interesting exhibits that can be seen under the wide canopy which extends the length of the building is the manufacture from raw material to finished product of toy automobiles made entirely of rubber as souvenirs of the exhibit. There, also, are shown the various products manufactured by Firestone, including passenger car and truck tires and tubes, batteries, spark plugs, brake lining, and dozens of other rubber parts used in the automobile of today.

Within the building proper is a typical American farm complete to the minutest detail with waving fields of grain in the distance—barn, house, implement shed, live cows, and chickens, and around the farm yard are placed tractors and all necessary implements for up-to-date operation of a typical farm. Each of these vehicles is equipped with Ground Grip tires, giving an impressive picture of how Firestone has put the farm on rubber. Much of this equipment was brought to the exposition from Harvey S. Firestone's homestead farm in Columbiana County, O., where he developed for farm implements the rubber tires which have been one of the great contributions to the advancement of modern farming since the introduction of power machinery. This tire equipment ranges in size from the mammoth tractor tires weighing hundreds of pounds to the pneumatic for the wheelbarrow.

Other representatives of the rubber industry displayed at the exposition are the Ohio Rubber Co., Willoughby, and the Forest City Rubber Co., Cleveland.

(Top) The Firestone Building with Its Singing Fountains; *(Bottom)* Farm Scene of the Firestone Exhibit, Great Lakes Exposition

The Dayton Rubber Mfg. Co., Dayton, according to Director of Advertising R. L. Wetzel is building a new 50- by 125-foot addition to its office building to double its size.

The Patterson Foundry & Machine Co., manufacturer of grinding and mixing machinery, East Liverpool, through President Richard L. Cawood, has announced the purchase of the ball or mushroom grinder and mixer business of the A. & F. Brown Co., Elizabeth, N. J. The complete line of ball grinders and mixers will now be manufactured at Patterson's main factory at East Liverpool.

El Salvador

El Salvador has one relatively important rubber manufacturer whose products consist of rubber soles and heels. Imports of crude rubber by El Salvador in recent years are officially reported as follows: 1931, 5 kilos; 1932, 5,758; 1933, 2,130; 1934, 6,798; 1935, 2,747 kilos. It is understood that the rubber-working machinery in use by the one firm is of German manufacture. (Vice Consul Joseph E. Maleady.)

NEW ENGLAND

BUSINESS in New England continues brisk. The cotten end of the **textile industry** has been substantially better for the past two months, with prices, production, and sales rising. Incoming orders have been running sufficiently ahead of production so that the mills have been able to pile up considerable back logs, thus assuring fairly heavy operations for some weeks to come. Many shoe factories are running at virtual capacity. New building, moreover, is at a rate approximately double that of a year ago. Miscellaneous manufacturing operations continue to hold up surprisingly well, considering the season. Steel, machinery, electrical equipment, hardware, and chemicals show no indication of a recession from the spring peak.

A survey of the rubber manufacturing situation has been started in Rhode Island, in conjunction with other states, by the United States Tariff Commission as part of its fact-finding function for those drafting American tariff laws, it was learned with the recent arrival in Providence, of Frank H. Whitehouse, economist and surveyor of the tariff commission. Because the commission forbids its employes to talk, Mr. Whitehouse was hesitant to discuss his presence in Rhode Island, except to say that the rubber survey is being made. He stated he would go to New York after completing his work in Providence and vicinity, having already visited Massachusetts rubber centers.

Although the withdrawals from Rhode Island banks on payrolls during June by manufacturing industries of the state averaged 11.1% higher than in the corresponding month of 1935, the payroll withdrawals by the rubber industry were $234,352, or a 24.3% advance over a year ago.

Fifteen corporations identified with the rubber industry are included in the 1936 state corporation tax for Rhode Island as paying upon a corporate excess of $100,000 or more, according to a recent announcement of the State Board of Tax Assessors. These fifteen corporations have a total excess amounting to $10,123,099.69 upon which they are assessed taxes reaching $44,573.36. The corporations together with the excess and tax of each follow: American Emery Wheel Works, $184,293, tax $737.17; American Wringer Co., $684,110, tax $2,736.44; Anaconda Wire & Cable Co., $408,682.57, tax $1,634.73; Arbeka Webbing Co., $125,000, tax $500; Collyer Insulated Wire Co., $596,175.67, tax $2,384.70; Davol Rubber Co., $549,154, tax $2,192.61; General Cable Co., $890,545.54, tax $3,562.18; Hope Webbing Co., $395,000, tax $1,580; Moore Co., $122,690, tax $490.76; George C. Moore Co., $658,240, tax $2,632.09; Nicholson File Co., $3,992,070.47, tax $15,968.28; Providence Insulated Wire Co., $151,123.01, tax $604.49; United States Rubber Co., $500,000, tax $2,000; United States Rubber Products Co., $570,459.52, tax $2,281.83; Washburn Wire Co., $1,316,771.92, tax $5,267.08.

Sponge Rubber Products Co., Derby, Conn., will erect at an estimated cost of $10,000 a new building to be used for manufacturing purposes. The new structure, 75 by 130 feet, will have a steel frame, steel and brick outside wall, and concrete floor.

Acushnet Process Co. for two weeks recently had a display in the windows of the Morris Plan Bank, 103 William St., both of New Bedford, Mass., the eighteenth of the series of industrial exhibits arranged by the bank to acquaint residents with products made by the various industries of New Bedford and immediate vicinity. Acushnet, the community's only rubber plant, showed how its golf balls are made and also a complete line of druggists' sundries as well as the materials and molds used in their manufacture.

Colloid Chemistry Course

Attendance at the special summer course in colloid chemistry, given at the Massachusetts Institute of Technology by Dr. E. A. Hauser during June and July, indicated the rapidly developing interest in this significant field of chemistry. The industries represented by those taking the course included rubber, oil, paint, printing ink, and cement, as well as several research laboratories and chemical manufacturers. Besides the regular work of Dr. Hauser's course, there were opportunities for carrying on research on problems of individual interest, utilizing the Institute's unexcelled facilities for their investigations.

Of the 27 persons attending the lecture and laboratory sessions 16 represented concerns identified with rubber and allied interests. They were: Perley A. Coffin, of the Vultex Chemical Co., Cambridge, Mass.; Murrell J. De France, Goodyear Tire & Rubber Co., Akron, O.; Colver P. Dyer, Merrimac Chemical Co., Everett, Mass.; Carl J. Frosch, Bell Telephone Laboratories, New York, N. Y.; Gordon E. Gott, Wilfred A. Kalber, Jacob E. Mark, and Kenneth Tator, all of Dewey & Almy Chemical Co., No. Cambridge; Winfield F. Kelsey, Chatham Mfg. Co., Middletown, Conn.; E. F. Gilfillan, of A. D. Little Co., Cambridge; Daniel Rhee, Carr Mfg. Corp., Bristol, R. I.; Richard O. Roblin, Jr., American Cyanamid Co., New York; W. F. Russell, of R. T. Vanderbilt Co., Norwalk, Conn.; George W. Thielcke, of King & Lang, Inc., S. Norwalk, Conn.; Bradley Dewey, Jr., and Davis R. Dewey, 2nd, students.

Boston Woven Hose & Rubber Co., Cambridge, Mass., on June 24 and 25 was subject to a 43-hour strike, marked by complete absence of violence. The workers' union demanded a 10% increase in wages, 100% Bedaux bonus, vacations with pay, and a closed shop, but the only important concession granted by the company was time and a half for overtime instead of time and a third.

Archer Rubber Co., Milford, Mass., recently restored the cut made in February which affected one-fifth of the workers. All workers at the plant are now on a 40-hour week basis, according to a statement by W. J. Moore, counsel for the company, following a conference between employers and employes, at which President John T. Callahan and Mr. Moore represented the company, and a committee and Attorney H. D. Barbadoro represented the workers. The Archer Rubber Co. Union later met to take action on the report of its executive committee. According to reports, no decision was given at the conference to several important demands that were made by the union.

Dewey & Almy Chemical Co., on June 17 moved its office to 62 Whittemore Ave., No. Cambridge, Mass.

Phillips-Baker Rubber Co., 44 Warren St., Providence, R. I., has completed a two-story brick addition, 38 by 75 feet, to its manufacturing plant at an estimated cost of $16,000. This concern has been awarded a contract for 926 pairs of hip boots from the Boston Quartermaster Department, United States Army, for the Civilian Conservation Corps.

United States Rubber Products, Inc., Bristol, R. I. More than 600 employes and their families gathered at Crescent Park, on Narragansett Bay, July 11 for the annual outing and clambake of the company's Employes' Association. The trip was made by train, buses, and private automobiles, a special train being requisitioned. Prizes were awarded winners in the various athletic events.

U. S. Rubber's Naugatuck, Conn., plant was closed a fortnight last month for the annual shutdown during which repairs were made in the factories and inventory was taken. Roy Bunting, C. W. Vaughan, John Murphy, and Victor Hurt, all executives in the sundries division, have been transferred from Naugatuck to the Providence, R. I., plant in line with the company's policy of consolidating its various activities. Naugatuck will continue to lead in the production of footwear, but more shiftings from the sundries division are expected. Already one-third the sundries work has been transferred.

MIDWEST

DROUGHT and high temperatures curtailed business activity in the Midwest, and the continuance of these unfavorable factors is expected to cripple the buying power of the entire section. In the St. Louis district, however, wholesale orders so far have picked up as higher prices for farm output somewhat offset crop losses. Plus government relief, rural buying is fairly good to date.

The heat wave, though, was not without its good points. Retail stores enjoyed a good turnover in hot weather supplies and vacation needs. In a few days the entire electric fan supply in Minneapolis was sold out; while beverage companies reported business far ahead of normal, and ice cream plants have difficulty in keeping up with orders. Sales of mechanical refrigerators also were spurred by the hot spell; and gasoline business is at a peak, as never in history have so many cars crowded the city's thoroughfares during evenings and at night.

Chicago reports generally improved conditions. Bonus money is still a favorable factor here.

In St. Louis the vacation movement has speeded up, and the general railroad picture is attractive. Carloadings have gained, and several lines report exceptionally heavy tonnage. Unemployment continues its decline chiefly because of extensive government projects. Recessions in zinc prices, due largely to slack foreign buying, have slowed activity in the mineral field.

New car sales are declining; so is production, and this trend may be expected to continue through the third quarter. June production, estimated at about 430,000 units, makes the best June on record save in 1929. June factory sales constituted a record with the total 34% above June, 1935, shipments. The July production figure is set at 425,000 cars and trucks. Total output of automobiles in the United States for the first half of 1936 will come close to the 2,500,000 mark, or nearly double production in all of 1932. The increase over the first six months of 1935 is 10%. It is interesting to note that the automobile industry still leads the field, as it has done all through the recovery period. Manufacturers are expected soon to begin preparations for new models.

Western Felt Works, Chicago, Ill., has issued an interesting bulletin describing applications of a new line of felt products for automotive construction. The first of these is Resistofelt, consisting of two layers of felt with a center strip of "DuPrene"[1] synthetic rubber. This material is used for washers as a grease seal on revolving shafts. An application for truck rear wheels is described and illustrated. Another novel material is Westofeltpal, a strong, flexible gasket material for use where there are no high temperature conditions. Gaskofelt is a felt material impregnated with "DuPrene" and is said to make an excellent gasket material where high quality and strength are required. One application of this gasket is for tractor housings where the contour is of irregular form.

[1] Trade mark registered.

Gillette Rubber Co., Eau Claire, Wis., is erecting a 50- by 130-foot addition to one of its plant buildings.

Newark Wire Cloth Co., Newark, N. J., manufacturer of high-grade wire cloth and wire cloth products, has appointed Carl J. Eberly representative in the Detroit, Mich., territory, with headquarters at 2-251 General Motors Bldg.

PACIFIC COAST

CONSPICUOUS by its absence along the Pacific Coast is the usual midsummer slump in wholesale and retail merchandising. Hotels and restaurants report an unprecedented rush of tourists; while home building is on a much greater scale than in many years. Electrical goods houses are enjoying active business, especially in heavy wares. Besides, seasonal activities in the harvesting of fruits and other agricultural crops are in full swing, absorbing many thousands of workers who have been on relief.

Sierra Rubber Co., 2471 E. Eighth St., Los Angeles, Calif., is the name of the company operated by Claus Vonder Reith and Henry Gabriels, Jr., both of whom last November resigned from the Kirkhill Rubber Co., manufacturer of molded rubber goods, plumbers' supplies, and specialties, 5801 S. Hoover St., Los Angeles, to start the new enterprise.

OBITUARY

(Continued from page 51)

Howard W. Fitz

HOWARD W. FITZ, president of the Collyer Insulated Wire Co., Pawtucket, R. I., died June 23. He had also been, for 30 years, manager of the Slater branch of the Industrial Trust Co., Pawtucket. In 1933 he was appointed a member of the State Foreign and Domestic Commerce Commission by Governor Theodore Francis Green.

Mr. Fitz was born in Haverhill, Mass., March 6, 1866, attended the public schools, and later studied law at Columbia University in Washington, where he earned his bachelor of law degree. At the same time he was employed by the War Department and later worked for the Smithsonian Institute, attending the World Fair at Chicago in 1893 as its agent.

Besides practicing law for a time in Illinois, Mr. Fitz acted as credit manager of a large tea and coffee firm in the West, then became credit manager of Swift & Co.'s plant at Omaha, Neb.

FINANCIAL

Baldwin Rubber Co., Pontiac, Mich. Six months ended June 30: net income after depreciation, federal taxes, and other charges, $245,064, equal to 88¢ a share on 278,768 shares, present capitalization, after giving effect to complete conversion of old Class A and Class B stocks and thereafter giving effect to four-for-one stock split. No provision made for federal surtax on undistributed profits. Quarter ended June 30: net income $123,978, or 43¢ on same basis, compared with $123,978 or 44¢ in first quarter.

Dayton Rubber Mfg. Co., Dayton, O., and subsidiaries. Seven months ended May 31: net income, $166,917, equal after preferred dividends to 72¢ each on 156,245 common shares, compared with net income of $46,624 before federal taxes in the same period a year before.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Second quarter, 1936. Earnings equaled $2.06 a share on its common stock, including the dividend from General Motors investment amounting to $1.11 a share on du Pont common stock. In the preceding quarter the company earned $1.21 a share on du Pont common, which included 45¢ a share from the General Motors investment, and in the June quarter of 1935 earnings of 89¢ a share on du Pont common included 22½¢ a share from General Motors.

For the six months ended with June, earnings equaled $3.27 a share on common, including dividends from General Motors of $1.56 a share. This compares with $1.74 a common share in the first half of 1935, including 45¢ on du Pont common from the investment in General Motors.

These figures include the company's equity in undivided profits or losses of controlled companies not consolidated.

National Rubber Machinery Co., Akron, O. Quarter ended March 31: net loss, $19,566 after taxes, depreciation, provision for bad debts, and other deductions.

Printed Crinkled Rubber[1]

PRINTED sheets of rubber are crinkled by stretching a partially cured or uncured sheet of rubber and, while it is stretched, tacking it at spaced intervals to a relaxed printed sheet of partially cured or uncured rubber. Upon release of the stretched sheet, contraction takes place in the composite sheet and causes the relaxed sheet to be crinkled. The crinkled effect may also be produced on both sides of a composite sheet by placing a stretched sheet between two relaxed sheets and attaching them by running them through rolls to cause their attachment at spaced intervals. The crinkled printed surfaces produced an unique and effective ornamental appearance.

[1] U. S. patent No. 2,037,539, Apr. 14, 1936.

Rubber Industry in Europe

GREAT BRITAIN

Chemical Engineers Meet

The First International Congress of Chemical Engineering, held under the auspices of the World Power Conference, at Central Hall, Westminster, London, June 22 to 27, was officially opened by the Duke of Kent, when about 120 papers were presented. Among the speakers was C. M. A. Stine, of the American Institute of Chemical Engineers and vice president of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., U. S. A., who discussed the place of fundamental research in an industrial research organization.

Prof. N. F. Juschkewitsch, of the U.S.S.R., told of the development of chemical research and progress in the chemical industry in Russia since 1917. To the rubber industry his remarks on the work of the various rubber research organizations were of special interest. These bodies include the Moscow and Leningrad Research Institutes for Synthetic Rubber, where the production of synthetic rubber and the treatment of by-products are studied and designs for factories are worked out; the Scientific Research Institute of the Rubber Industry in Moscow, which concentrates on the improvement of technological processes; the Scientific Research for Rubber and Gutta Percha, whose field is the development of local rubber-bearing plants and of methods of extracting the rubber from the plants; and the Scientific Research Institute for Plastic Masses in Leningrad and Moscow.

The chemical research work in Japan was treated by N. S. Kyoku.

Simultaneously with the congress and in the same building was held the 1936 British Chemical Plant Exhibition, opened by the Rt. Hon. Ramsay Macdonald, Lord President of the Council. The rubber industry was represented by the Research Association of British Rubber Manufacturers, which demonstrated the varied properties of rubber in relation to its technical applications as illustrated by the data contained in "Rubber: Physical and Chemical Properties" recently published by the association. The far greater utility of rubber due to the latest compounding and vulcanizing technique was illustrated; various vulcanized products including soft rubbers, hard and sponge rubber, and their applications in chemical engineering were displayed. The resistance of rubber to chemicals, absorption, penetration by gases and liquids, its thermal, optical, electrical, and mechanical properties were demonstrated. Recent developments, as the use of rubber latex, chemical derivatives, and synthetic rubber-like materials, were shown. Seen also were specimens of transparent rubbers, samples of the new German synthetic rubber Buna, gas masks, and rubber gloves.

Notes

To protect the new £400,000 hotel being erected for the London Midland & Scottish Railway Co. at Leeds from the effects of traffic vibration and to insure that patrons will suffer as little as possible from traffic noises, 100 feet of the road have been paved with rubber blocks four inches deep, held together by a rubber solution. The new road, recently opened, is said to absorb 70% of surface vibration.

The manufacture of rubber in crumb or powder form has now entered a more advanced stage. Recently the Rubber Powder Co., Ltd., shipped a machine for the production of this type of rubber to the Sumatra plantations of the Amsterdam Rubber Co. (R. C. M. A.), and samples of the crumb rubber have already been received. The Amsterdam company has entered a contract for the sale of 60 tons of rubber powder at a price of 1d. per lb. premium over standard smoked sheet, with an option on a further 60 tons. Incidentally, it appears that the company is using the Yssel de Schepper process to produce crumb or powdered rubber.

Following the introduction of powerful mechanical tractors to take the place of horse teams in one of the batteries of the Royal Horse Artillery, it was observed that the vibration caused by the greater speed of the tractors tended to damage the delicate instruments and accessories with which modern guns are fitted. Tests were consequently made to determine whether the harmful vibration could be reduced by equipping the gun wheels with pneumatic tires. The results were so satisfactory that it has now been decided to equip all higher types of artillery with pneumatics.

The next meeting of the International Rubber Regulation Committee is scheduled for September 29.

June 16, 1936, according to Quincy Tucker, former rubber planter and authority, was the sixtieth anniversary of the arrival and planting of the smuggled Brazilian rubber seeds in Kew Botanical Gardens, London. In about sixty days after planting many of the young rubber trees or plants were shipped to Ceylon, and now 8,000,000 acres are planted in the tropical East.

GERMANY

Chemists' Meetings

A number of chemical conventions were scheduled for July 7 to 11 on the occasion of the National Convention of German Chemists in Munich. These included, among others, the forty-ninth general meeting of the Association of German Chemists, July 7 to 11; the ninth general meeting of the Deutsche Kautschuk Gesellschaft, July 8 to 10; and the tenth annual meeting of Dechema, the organization for chemical apparatus, July 10.

The papers read at the meeting of the Deutsche Kautschuk Gesellschaft included: "Synthetic Rubber," by Dr. E. Konrad; "Various Rubber Ozonides and the General Question of the Existence of Primary Ozonides," Professor Pummerer; "Decomposition of Rubber by Acids," Dr. Hans-Peter Mojen; "The Mechanical Properties of Rubber Solutions," Dr. W. Philippoff; "The Viscosity of Latex and Latex Compounds," Dr. O. Bachle; "Vulcanization Accelerators," F. Loblein; and "The Action of the Disulphide Vulcanization Accelerators," Professor Langenbeck.

Patent Law Changes

The German patent laws have recently been revised, the new laws to go into effect as from October 1, 1936. A large part of the old regulations, dating from 1891, will be retained. The more important changes include provisions insuring the rights of the inventor; the patent belongs to him and his legal successors. Again, whereas formerly the actual inventor was not mentioned at all, the applicant is now obliged to give the name of the true inventor, which is later on published. To permit the trying out of an invention before it is patented the new rules declare that a patent is in no way invalidated if it has been publicly described or used within six months before the date of application. If the government decides that a patent must be used for the welfare of the community or if it is actually used for defense purposes, the patent does not go into effect. In that case the patentee may claim suitable compensation, but no damages.

Following the English example, patentees may now declare in a written, irrevocable statement at the patent office their readiness to grant licenses to anyone, against suitable compensation, such compensation to be fixed by the Patent Division.

Patent fees will be adjusted to meet individual cases; thus payment may be

delayed or even remitted for needy persons; in any case no fee is payable before the third patent year.

Company News

Competition from Japanese and American firms outside the International Rubber Thread Association forced the latter to lower prices in almost all foreign countries in the face of rising prices for crude rubber, the Kolnische Gummifaden-Fabrik vorm. Ferd. Kohlstadt & Co., Koln-Deutz, states in its latest business report. As far as this firm itself is concerned, the underselling by the outsiders hindered the development of the production of round thread recently undertaken; sales of other thread declined considerably both in home and foreign markets. The volume of business in other products could be increased, but at the cost of a cut in price. Total receipts for 1935 were 9.5% lower than in 1934, and the year closed with a loss of 48,430 marks.

The strenuous efforts of C. Muller, Gummiwaarenfabrik A.G., Berlin-Weissensee, to increase its exports were successful as far as volume was concerned, but prices were frequently unprofitable largely because of German competition. Home business, however, was better so that despite all handicaps a profit of 42,514 marks could be made and a 3% dividend paid. The factories at present are well occupied, and although the utmost economy is practiced in the use of imported raw materials, the quality of the products could be further improved.

The New-York Hamburger Gummi-Waaren Compagnie booked net profits of 14,762 marks, of which 11,856 were credited to reserves and the balance carried forward. The firm has been successfully developing a section for the production of pressed goods containing no rubber, but states that despite the increasing importance of this type of goods for all kinds of purposes, hard rubber continues indispensable for a number of special uses.

EUROPEAN NOTES

Roumania is yet another of the smaller countries trying to curb foreign imports and to satisfy at least its own requirements by fostering local industry. Latest import figures of rubber manufactures seem to indicate that she progressed considerably in this direction during 1935. Whereas in 1934 total imports of rubber goods came to 20,035 quintals, value 256,733,000 lei, they were 15,990 quintals, value 72,641,000 lei, in 1935. The decrease is most striking in imports of footwear which fell from 7,535 quintals, value 129,452,000 lei, to 2,869 quintals, value 44,235,000 lei. Declines were also noted in most other items, including hose, from 469 quintals, value 5,723,000 lei, to 192 quintals, value 2,508,000 lei; rubberized fabric, from 1,451 quintals, value 23,366,000 lei, to 905 quintals, value 10,739,000 lei; rubber thread, from 317 quintals, value 10,004,000 lei, to 167 quintals, value 5,733,000 lei; cycle tires, from 355 quintals, value 2,368,000 lei, to 146 quintals, value 1,001,000 lei. On the other hand automobile tire imports increased from 6,612 quintals, value 43,561,000 lei, to 7,912 quintals, value 55,582,000 lei; and surgical goods imports rose from 230 quintals, value 11,158,000 lei, to 1,901 quintals, value 43,326,000 lei. Technical goods also improved from 86 quintals, value 2,491,000 lei, to 109 quintals, value 2,636,000 lei. All of this may reflect the progressive tendency in the country.

Imports of crude rubber have fluctuated widely in recent years; while they came to only 3,764 quintals in 1933, they soared to 12,592 quintals in 1934. This figure was evidently considerably more than the growing industry could absorb, for imports dropped to 7,858 quintals in 1935, which, however, is still more than double the 1933 figure. England supplies most of the rubber goods imported into Roumania, but its share dropped 17% in 1935. But Germany more than doubled her part; while Italy's was 3½ times as much in 1935 as in 1934. Poland and the United States also managed to increase their business with Roumania to some extent in 1935.

Goodyear Rubber Co., Warsaw, Poland, again closed with a loss, this time of 111,803 zloty (on a capital of 510,000 zloty). The Wolbrom Rubber Factory booked a loss of 62,951 zloty (on a capital of 1,600,000 zloty), and Kabel Polski, Bydgoszcz, a loss of 154,579 zloty (on a capital of 7,300,000 zloty). The Sanok concern, however, capitalized at 1,800,000 zloty, made net profits of 370,183 zloty, and the Stomil Rubber Factory, Posen, closed with a profit of 404,737 zloty on a capital of 2,100,000 zloty.

Etablissements Bognier et Burnet, Ivry-sur-Seine, France, reports a profit of 1,003,692 francs for the past business year. With the carry-forward from the preceding year the amount available was 1,500,647 francs, of which 1,000,000 will be used for amortizations, 230,000 francs for interest on the A shares, and the remainder carried forward.

Etablissements Hutchinson, Compagnie Nationale du Caoutchouc, booked net profits of 10,543,241 francs in 1935-1936 against 10,609,310 francs in 1934-1935. A dividend of 75 francs per share will again be paid; while 3,177,745 francs are to be carried forward.

The well-known Belgian rubber company of Englebert & Co., Liege, reported gross profits of about 20,000,000 francs. From this was deducted the 1934 loss of 12,200,000 francs, and after certain other provisions were made a balance of 750,000 francs was carried forward.

Manufacture General de Caoutchouc C. Jenatzy-Leleux, Brussels, Belgium, made a profit of 888,040 francs last year. On the other hand another Brussels firm, Caoutchouc et Ebonite, Usines de Caoutchouc Manufacture et d'Accumulateurs Electriques, showed a loss of 1,606,231 francs.

A Swedish royal proclamation of April 30, 1936, effective May 7, reads that accelerators and antioxidants, not otherwise specified, for use in the rubber industry (except hexamethylenetetramine) are now duty free, but formerly were dutiable at 15% ad valorem.

Rubber Control

J. T. Johnstone, rubber broker of J. T. Johnstone & Co., Inc., 15 William St., New York, N. Y., has submitted for the interest of our readers the following copy of the letter sent by the well-known British rubber broker, Harry Symington, to the editor of the *London Times*.

"Sir:—The impression seems to be gaining ground that the International Rubber Regulation Committee are aiming at definite stability of price, that is to say, at the elimination of fluctuations. I trust that this idea is a mistaken one, but, if it is well founded, then rubber producers must prepare themselves either for the permanent maintenance of a system of control—the duration of the present agreement is only up to December, 1938—or for absolute chaos when control is taken off.

"With a large number of separate producers, not all of whose interests are identical, and a large and scattered body of consumers with widely varying requirements, free markets for the commodity such as have existed up to now in London and New York are a necessity. There are times when producers wish to sell but consumers do not happen to be in the market, and vice versa. It is at these times that the market comes to the rescue, taking over the rubber until it is wanted. In rubber, as in practically all articles, a middleman is a necessity, but the middleman cannot function if there exists no chance of reward. If fluctuations are eliminated markets must cease to exist as no body of men can be expected to take the risk of carrying and financing stocks with no hope of a profit.

"Therefore, if the committee in fact so handle matters during the next 2½ years that fluctuations are so reduced as to be practically non-existent the result is bound to be that most of the dealers in this and other markets will be forced out of business and the market will dwindle to very small dimensions. If at the end of 1938 it is desired to remove the control the distributing machinery will meantime have been almost destroyed and will have to be laboriously built up again. A continuation on the same lines—that is, with a stabilized price—for another period of, say, five years, would only lead to an even greater disaster, as at the end of that time the markets would certainly have gone out of existence altogether.

Yours obediently,

HARRY SYMINGTON

31-34, Fenchurch St., E.C.3, June 5."

Rubber Industry in Far East

MALAYA

Rubber Road Experiments

Experiments in rubber road surfaces have not been uniformly successful in Singapore. In one case air pockets soon developed, and the paving was a failure. *The Singapore Free Press* reports an experiment in which the results varied markedly when granite or limestone was used. Last year a section of road was paved opposite the Central Police Station, with granite on a part of the area and limestone on the rest. These bases were coated first with asphalt; then a rubber matrix was poured in. The granite section began to deteriorate soon after; whereas the limestone portion is still in good condition. The difference seems due to the fact that whereas limestone is alkaline, local granite is acid, and the rubber matrix would not adhere to it properly. Recently this section that failed was dug up again, and the granite coated first with a film of cement and then with asphalt before the rubber matrix, in the meantime greatly improved, was poured in. Cement as used as limestone is too expensive in Singapore, but it is expected that the cement will have the same effect as if limestone were employed. If this section, put down by Gammon (Malaya), Ltd., proves successful, it will no doubt stimulate the laying of many more roads of this type in Singapore.

The Gammon concern has for some time been experimenting with rubber macadam roads, employing a material named Malaytex. The concern holds the controlling interest in a small company being floated in England to develop not only Malaytex, but another process known as Recondo. The latter is the invention of N. H. Taylor, formerly connected with the Singapore Municipality and is a system of reconditioning and relaying old asphalt pavings economically. Mr. Taylor, at present in England, is to be managing director of the new company. Patent rights have been taken out both for Malaytex and Recondo in various parts of the world, and several important concerns in England and Europe have already evinced active interest in these products.

Company Reports

Golden Hope Rubber Estate, Ltd., now has an issued capital of £364,490 and a planted area of 9,701 acres, of which 1,098 acres are not more than seven years old, Eric Macfadyen, chairman of the concern, stated at the thirtieth ordinary meeting. The earliest bud-grafts have come into bearing, and yields are up to expectations. As the old areas have for years been lightly tapped, the present problem is to keep crops down to the exportable allowance. A policy of selecting and encouraging approved natural and introduced covers has been followed on the company estates for a number of years with gratifying results. The new ideas concerning cultivation make a much greater demand on planters and coolies alike, Mr. Macfadyen said, for where one coolie is employed today, more than three were formerly employed, and where an assistant used to have 300 to 400 acres under his supervision, he now looks after 1,000 acres. These changes together with improved tapping methods have helped reduce costs considerably. A coolie today brings in over 20 pounds of rubber, dry, in a day, but his predecessor brought in seven to eight pounds. Turning to the subject of replanting, Mr. Macfadyen stated that it is planned to replant 669 acres during this year and the next two years in addition to the 88 acres already replanted in 1935.

Seremban Rubber Estates, Ltd., is another concern much interested in controlled forestry. Under present conditions, the chairman said at the annual meeting, when costs have to be closely studied, it is the best form of soil rehabilitation that the company could adopt. This concern has a large acreage of old rubber planted before 1911 which is improving under the treatment. Progress, however, is necessarily slow and for this reason, and also because the replanting of 392 acres of old rubber has already given satisfactory results, an area of 200 acres, planted in 1898 and 1903, is to be taken in hand this year. The company's earliest budded rubber has been test tapped, and yields work out at 869 pounds per acre on the basis of 100 trees per acre.

The London Asiatic Rubber & Produce Co., Ltd., is also taking advantage of restriction to replant old, uneconomic areas. Arrangements have been made to cut out and replant 200 acres during 1936. The company had forward sales of 361 tons for 1936, of which 231 tons were sold at an average price of 7.8d. per pound, London landed terms. The remaining 130 tons and a further 120 tons for 1937 were sold for local consumption without export licenses at various prices below, but depending upon, the London average prices of each month prior to date of delivery.

By the end of this year the Selangor River Rubber Estates, Ltd., will have replanted 120 acres of the less economic areas and intends to do a further 100 acres in 1937. Under the control scheme the company may replant 555 acres to December, 1938. The concern has a substantial interest in the Belata River Co., which has a total area of 1,750 acres, of which 1,013 are under rubber, all bud-grafted.

Sungei Batu (Malaya) Rubber Estates, Ltd., having some areas over 30 years old no longer giving satisfactory yields, will replant about 300 areas, a third to be cut out immediately.

The above indicate very clearly that the larger estates in Malaya are taking full advantage of the permission to replant. In all cases only high-grade up-to-date planting material is being used for the replanting, something that will have to be taken into consideration in future calculations of potential outputs. It will also be noted that more and more estates are able to report budded areas at the bearing stage, although details are rather scant.

FAR EASTERN NOTES

The export tax on rubber exported from French Indo-China has again been increased by an order of April 29, 1936, published in the *Journal Officiel* of the colony on May 2. The new rates, in piasters per 100 kilos net, follow: rubber, 1.50 (formerly 1); liquid latex, 0.60 (formerly 0.40); concentrated latex, 0.90 (formerly 0.60).

Exports of rubber other than ribbed smoked sheets are prohibited from Sarawak, North Borneo.

A cable from abroad reads that British and other European companies are seeking application for a quota system freight trade in order to prevent rate cutting and to meet Japanese competition in rubber freightage from Malaya and the Netherlands East Indies to Great Britain and America.

In Peiping extensive plans are under way to convert all the thousands of draft carts in this city into rubber tired vehicles. Elimination of iron tires will save wear on the pavements and allow starters to use any street in the city for now their use is confined to rutty roads apart from main traffic avenues.

NETHERLAND INDIA

Rubber Statistics

The Central Bureau of Statistics in Netherland India reports total crude rubber exports during the first quarter of 1936 were about 4,000 tons below the exportable allowance. This figure, though, falls considerably below the 11,157 tons which the *Statistical Bulletin of the International Rubber Regulation Committee* states was the total below quota.

As usual, it is entirely due to the fact that estate exports have consistently been under exportable that Netherland India was able to remain within the quota. In the light of this fact it is felt that the two successive cuts in the special export duty were perhaps somewhat precipitate, and the more recent increases restoring the duty to the higher level are consequently regarded with satisfaction, especially as both the April and May native exports were on the high side, and particularly in the case of the April shipments, considerably above the March exports. The corrected figures for March shipments total 19,733,065 kilos; while the revised April figures total 25,689,869 kilos. Preliminary figures for May total 22,450,803 kilos, of which estates in Java and Madura account for 4,370,318 kilos; Outer Provinces, 7,283,723 kilos; and native rubber, 10,796,762 kilos.

Of special interest is the mention of 29,724 kilos of tires exported from Java and Madura in April against 19,626 kilos in March.

As the total monthly quota for Netherland India during the first half of 1936 works out at 25,000 tons, the above figures indicate that shipments continue to remain well within the quota, although there was a small excess in April, an excess for which native rubber was wholly responsible, as even in that month estate exports were below their permissible monthly quota, 13,122 tons for the second quarter of 1936.

Individual Restriction for Natives in 1937

The registration of native gardens is completed; now the huge mass of data must be worked up so that the introduction of individual restriction can be begun. This, the Governor General recently announced, would take place from January 1, 1937, when the special export duty, which, by the way, was raised to 35 guilders per 100 kilos dry weight on June 24, 1936, would be abolished; while the regular export duty would be in force. The latter, however, would be raised from the present 5% to 10%.

Discussing the general situation of the Outer Provinces in his opening speech at the first session of the People's Council on June 15, the Governor General stated that there was a definite improvement and now that the Dutch basic quota had been increased, it was to be expected that once individual restriction for natives was in operation, money would circulate more freely.

Notes

Much discussion has arisen from the report that the Goodyear tire factory at Buitenzorg found it necessary to lower prices twice within six months. This is considered the more remarkable as tire prices in America have recently gone up.

Rubber producers are watching with keenest interest the results of two separate experiments in the manufacture of powdered rubber, which, if successful, it is felt, will revolutionize the production of rubber in estate factories. The first is in progress on East Coast of Sumatra estates of the Rubbercultuur Mij., Amsterdam (Amsterdam Rubber Co.), where the Yssel de Schepper process is being exploited. At the second factory, being built for Mr. Munthe on his estate near Pelaboean Ratoe, South Preanger, Java, the Stam process is to be used. The necessary machinery has already been received, and the inventor, Mr. Stam, also arrived recently.

CEYLON

After due consideration by the local authorities concerning the proposal to establish an International Organization for Rubber Research and Propaganda, adopted by the International Rubber Regulation Committee, it was decided at a meeting of the Executive Committee of Labor, Industry, and Commerce, to support the scheme in principle. It was further agreed to recommend to State Council imposing a cess of 1d. per 100 pounds of rubber exported and to undertake to contribute the appropriate portion of the funds necessary to provide the salaries of the permanent members of the staff and of its standing charges for at least ten years. It was stipulated, however, that the interests of the local Rubber Research Institute must not in any way be adversely affected by the establishment of the proposed organization and that in the event Ceylon participates in the scheme, facilities must be made available for young Ceylonese for training and research in the laboratories.

The board of the Ceylon Rubber Research Scheme decided to ask the Department of Industries for a grant of 30,000 rupees for the purchase and installation of machinery for producing rubber flooring and other products on a semi-commercial scale. At the same time it was decided that Ceylon requires the services of a soil chemist; so as soon as funds are available, probably in 1937 or 1938, an appointment will be made.

INDIA

Local factories for making rubber footwear, especially rubber-soled canvas shoes, appear to be progressing rapidly and have forced a steep cut in the imports of these goods. Hitherto most of the rubber footwear seen in India was of Japanese origin, and the bulk of the imports still come from Japan, but during the fiscal year ended March, 1936, Japanese shipments to India dropped about 35%, from 3,619,671 pairs, value 1,980,000 rupees, to 2,376,678 pairs, value 1,370,000 rupees.

Total imports of footwear in 1935-36 came to 2,906,192 pairs, value 2,880,000 rupees, against 4,256,468 pairs, value 3,470,000 rupees. The 1935 figure included 369,749 pairs all-leather shoes, value 1,220,000 rupees, against 351,673 pairs, value 1,200,000 rupees, most of which came from Czechoslovakia and the United Kingdom. There were besides 2,049,526 pairs rubber-soled canvas shoes, value 1,260,000 rupees, against 2,979,735 pairs, value 1,710,000 rupees; other rubber-soled shoes, 23,587 pairs, value 50,000 rupees, against 156,973 pairs, value 90,000 rupees; 383,926 pairs all-rubber shoes, value 200,000 rupees, against 635,923 pairs, value 200,000 rupees; and of other materials, 79,404 pairs, value 150,000 rupees, against 132,164 pairs, value 160,000 rupees.

The value of automobile tires imported into India increased from 12,440,000 to 12,620,000 rupees. Great Britain's share of this business advanced from 8,700,000 to 9,900,000 rupees at the expense of the United States, Canada, and Italy, whose respective shares dropped from 1,450,000 to 1,000,000 rupees; from 410,000 to 60,000 rupees; and from 130,000 rupees to insignificance. Germany's shipments at 675,000 rupees remained practically the same; while those from France rose from 78,000 to 110,000 rupees.

The United Kingdom shipped most of the motor tire cycles, which totaled 51,000 rupees, and also the lion's share, if a slightly declining one, of the cycle tires, which totaled 2,320,000 against 1,970,000 rupees.

Plastic Extruder

(*Continued from page* 49)

plastic in relation to passing of the molds is provided by special mechanism.

In the use of the extruding device, it is desirable to have the molds travel around a circuit including the extruding device and the vulcanizing press, the molds being returned to the extruding device after the vulcanized articles have been removed therefrom. To accomplish transfer of the molds from the mold-returning conveyer to the extrusion device mold conveyer further mechanism is provided.

Patents and Trade Marks

MACHINERY

United States

2,041,788. **Dipped Goods Machine.** V. J. Sprunger, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,041,818. **Tire Tread Remover.** G. F. Connelly, San Francisco, Calif.

2,041,990. **Tire Builder.** W. J. Breth and M. L. Engler, assignors to General Tire & Rubber Co., all of Akron, O.

2,042,010. **Fabric Spreader.** A. P. Lewis, New Bedford, Mass., assignor to Firestone Tire & Rubber Co., Akron, O.

2,042,312. **Tire Spreader.** S. A. Huebner, Forest Junction, Wis.

2,042,498. **Collapsible Tire Band Form.** H. C. Bostwick, assignor to Akron Standard Mold Co., both of Akron, O.

2,042,509. **Tire Tread Remover.** G. F. Connelly, San Francisco, Calif.

2,042,536. **Strip Rubber Apparatus.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,042,829. **Rubber Cutter.** J. C. Carlin, Norristown, assignor to Lee Rubber & Tire Corp., Conshohocken, both in Pa.

2,042,948. **Footwear Presser.** H. F. Lewis, Hamden, Conn., assignor to United States Rubber Co., New York, N. Y.

2,043,165. **Doup Heddle Loom.** W. H. Hall, Jr., assignor to Thermoid Rubber Co., both of Trenton, N. J.

2,043,169. **Tire Spreader and Rim Remover.** P. E. Hawkinson, assignor to Paul E. Hawkinson Co., both of Minneapolis, Minn.

2,043,475. **Teeth Vulcanizing Flask.** A. Field, Dayton, O.

2,043,528. **Insulation Tester.** R. L. Davis, Wallingford, Conn.

2,043,795. **Festoon Drier.** C. A. Dickhaut, Highland Park, and C. C. Willis, Bound Brook, assignors to John Waldron Corp., New Brunswick, all in N. J.

2,043,937. **Collapsible Chuck.** E. G. Templeton, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

2,044,681. **Tire Spreading Tool.** H. J. Griffith, assignor of 2/12 to E. Cone, 1/12 to M. Cone, and 1/12 to E. L. Cone, all of Denver, Colo.

Dominion of Canada

358,088. **Vulcanizer.** W. A. Gwynn, St. Louis, Mo., U. S. A.

358,108. **Rubber Bag Mold.** A. Richards, Providence, R. I., U. S. A.

358,186. **Hollow Article Mold.** Viceroy Mfg. Co., Ltd., assignee of L. J. Clayton, both of Toronto, Ont.

358,206. **Tire Spreader.** H. A. Sorum, Shelby, Mont., U. S. A.

358,394. **Pile Fabric Machine.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of Naugatuck Chemical Co., Naugatuck, Conn., assignee of E. Hopkinson, deceased, New York, N. Y., both in the U. S. A.

United Kingdom

442,474. **Tire Retreader.** H. Simon, Ltd., Cheadle Heath.

442,780. **Tire Wrapper.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, H. Smith, and G. C. Brentnall, all of Birmingham.

442,799. **Tire Apparatus.** Dunlop Rubber Co., Ltd., London, H. Willshaw and W. A. Cowles, both of Birmingham, and F. Shaw & Co., Ltd., Bradford.

443,166. **Surface Coater.** Scott & Turner, Ltd., Newcastle-upon-Tyne, J. E. Diamond, Northumberland, and C. W. Perkins, London.

443,277. **Thread Conveyer.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands.

443,492. **Ball Vulcanizer.** Dunlop Rubber Co., Ltd., London, and E. A. Murphy and G. W. Trobridge, both of Birmingham.

443,621. **Dipping Apparatus.** J. R. Gammeter, Akron, O., U. S. A.

443,639. **Matting Vulcanizer.** Redfern's Rubber Works, Ltd., Cheshire, and J. H. Coffey, Rhos-on-Sea.

443,653. **Air Tube Deflater.** Dunlop Rubber Co., Ltd., London, and H. Willshaw and H. J. Page, both of Birmingham.

443,768. **Latex Centrifugal Machine.** Aktiebolaget Separator and G. H. Andersson, both of Stockholm, Sweden.

Germany

631,215. **Tread Automatic Abrasion Indicator.** J. W. Amsler, Feuertalen, Zurich, Switzerland. Represented by A. Wedde, Dresden.

631,414. **Multiple Tire Vulcanizer.** Societa Italiana Pirelli and G. Cozzo, both of Milan, Italy. Represented by A. Bursch, Berlin.

PROCESS

United States

2,041,712. **Coating.** G. S. Hiers, Pittsburgh, assignor to Collins & Aikman Corp., Philadelphia, both in Pa.

2,041,968. **Waterlaid Product.** M. O. Schur, assignor to Brown Co., both of Berlin, N. H.

2,042,033. **Decorating Fabric.** W. Witte, Glen Rock, assignor to National Dyeing & Printing Co., Paterson, both in N. J.

2,042,104. **Rubber Coated Soap.** J. P. Kane, New York, N. Y.

2,042,437. **Thread or Fabric.** J. I. Taylor, Elizabethton, Tenn., assignor to North American Rayon Corp., New York, N. Y.

2,042,476. **Irregular Surface Printing.** H. H. Meyer, assignor to L. J. Eppinger, both of Detroit, Mich.

2,042,824. **Rope.** S. A. Brazier and C. Hampson, both of Manchester, and M. Langstreth, Rochdale, assignors to Dunlop Rubber Co., Ltd., Birmingham, all in England.

2,042,960. **Hard Rubber Dust.** F. N. Pickett, London, England, assignor to United States Rubber Products, Inc., New York, N. Y.

2,043,154. **Printing Roller.** S. F. Damm, Niagara Falls, N. Y.

2,043,630. **Forming Articles by Dipping.** P. A. Raiche, North Providence, R. I., assignor to Davol Rubber Co., a corporation of R. I.

2,043,766. **Rubber Bonded Abrasive Article.** C. S. Nelson, assignor to Carborundum Co., both of Niagara Falls, N. Y.

2,043,809. **Cut-Embossing Stock Sheet.** G. Papp, Astoria, assignor to Peters Bros. Rubber Co., Inc., Brooklyn, both in N. Y.

2,043,938. **Molded Product.** H. R. Thies, assignor to Wingfoot Corp., both of Akron, O.

2,044,626. **Concentrating Latex.** J. E. Nyrop, Copenhagen, Denmark.

Dominion of Canada

358,155. **Improving Cork.** Crown Cork & Seal Co., Inc., Baltimore, Md., U. S. A., assignee of R. Bofill-Bruguera, assignee of J. Martin-Muller, both of Palafrugell, Gerona, Spain.

358,187. **Microporous Diaphragm.** Willard Storage Battery Co., Cleveland, assignee of W. L. Reinhardt, Shaker Heights, and L. E. Wells, Cleveland Heights, co-inventors, all in O., U. S. A.

358,454. **Rubber Product.** Vultex Corp. of America, Cambridge, assignee of H. J. Elwell, Newton, both in Mass., U. S. A.

358,457. **Transparent Film.** Wingfoot Corp., Wilmington, Del., assignee of W. C. Calvert, Cuyahoga Falls, O., both in the U. S. A.

358,525. **Crinkled Sheet Material.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of J. J. Galligan, Providence, R. I., and F. O. Thornton, Jr., Kew Gardens, L. I., N. Y., co-inventors, both in the U. S. A.

358,570. **Sponge Rubber Goods.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of S. D. Taylor and E. W. Madge, co-inventors, both of Birmingham, England.

358,573. **Leather Simulating Product.** La Société des Procédés Ecla, assignee of F. F. Schwartz, both of Paris, France.

United Kingdom

442,002. **Treating Pulp Web.** A. H. Stevens, London. (Raybestos Co., Bridgeport, Conn., U. S. A.)

442,215. **Compound Sheet Material.** Carborundum Co., Ltd., Manchester.

442,559. **Coating Inking Rollers.** A. L. Freedlander, Dayton, O., U. S. A.

442,728. **Artificial Yarn.** E. G. E. Meyer and E. C. Burgoyne, both of Hounslow.

442,931, 442,935, 442,936, and 442,937. **Rubber Thread.** T. L. Shepherd, London.

442,964. **Creaming Latex.** United States Rubber Co., New York, N. Y., assignee of J. McGavack, Leonia, N. J., both in the U. S. A.

443,096. **Glazing Strips.** J. Talalay, Bedford.
443,207. **Ornamenting Fabric.** G. Cogno, Torino, Italy.
443,284. **Rubber Thread.** T. L. Shepherd, London.
443,458. **Porous Elastic Fabric.** P. H. Head, Attenborough.
443,642. **Spinning Roll Cover.** A. S. Lowry, Romiley.
443,645. **Compound Fabric.** W. D. Spencer, Liverpool, and F. T. Walker and Imperial Chemical Industries, Ltd., both of London.

Germany

631,250. **Rubber Thread.** C. T. Pastor, Huls uber Krefeld.
631,697. **Vulcanizing.** Goodyear Tire & Rubber Co., Akron, O., U. S. A. Represented by E. and W. Meissner, both of Berlin.
631,733. **Perforating and Eyeleting Rubber Fabric.** William Prym G.m.b.H., Stolberg, Rhld.
631,942. **Attaching Soft Rubber to Rigid Surfaces.** B. F. Goodrich Co., New York, N. Y., U. S. A. Represented by G. Bertram and K. Lengner, both of Berlin.
631,963. **Wheel Building.** E. Rimailho, Paris, France. Represented by A. Levy and F. Heinemann, both of Berlin.
632,027. **Perforated Rubber Goods.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands. Represented by R. and M. M. Wirth and C. Weihe, all of Frankfurt a. M., and T. R. Koehnhorn, Berlin.

CHEMICAL

United States

2,041,782. **Secondary Amines.** W. L. Semon, Silver Lake Village, O., assignor to B. F. Goodrich Co., New York, N. Y.
2,041,814. **Vinyl Chloride.** S. L. Brous, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
2,041,854. **Antiager.** A. M. Neal, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.
2,042,047 and 2,042,048. **Accelerator.** A. F. Hardman, assignor, by mesne assignments, to Kelly-Springfield Tire Co., both of Cumberland, Md.
2,042,063. **Rubber Cement.** R. J. and E. C. King, assignors to Robert J. King Co., Inc., all of Stamford, Conn.
2,042,333. **Antiager.** M. R. Coe, Washington, D. C.
2,042,923. **Plastic Composition.** A. E. Brooks, Nutley, N. J., assignor to United States Rubber Products, Inc., New York, N. Y.
2,043,324. **Waterproofing Composition.** J. R. Hubbard, assignor to Peter Cooper Corp., both of Gowanda, N. Y.
2,043,939. **Accelerator.** H. R. Thies, Kent, assignor to Wingfoot Corp., Akron, both in O.
2,043,948. **Accelerator.** A. M. Clifford, Stow, assignor to Wingfoot Corp., Akron, both in O.
2,043,949. **Accelerator.** H. I. Cramer, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, both in O.
2,044,046. **Latex - Reclaimed Rubber Aqueous Dispersion Mixture.** A. E. Barnard, Waterbury, and W. E. Messer, Cheshire, both in Conn., assignors, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,044,059. **Antiager.** W. S. Calcott and W. A. Douglass, both of Pennsgrove, N. J., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.
2,044,505. **Thermoplastic Composition.** W. Koch, assignor to Hercules Powder Co., both of Wilmington, Del.

Dominion of Canada

358,523. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of C. Coleman, Passaic, N. J., U. S. A.
358,524. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of L. Meuser, Naugatuck, Conn., U. S. A.
358,569. **Rubber Preparation.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. A. Murphy and E. W. Madge, co-inventors, both of Birmingham, England.

United Kingdom

442,607. **Accelerator.** Coutts & Co., London, and F. Johnson, Eastbourne, (representatives of J. Y. Johnson). (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)
442,872. **Coating Composition.** E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.
442,954 and 442,978. **Accelerator.** Wingfoot Corp., Akron, O., U. S. A.
443,100. **Rubber Composition.** Wingfoot Corp., Wilmington, Del., U. S. A.
443,102. **Coloring Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.
443,148. **Plastic Composition.** R. S. Tompsett, Taplow.
443,219 and 443,236. **Accelerator.** E. I. du Pont de Nemours & Co., Wilmington, Del., U. S. A.
443,298. **Coating Composition.** Freudenberg & Co., Ges., Frankfurt a. M., Germany, assignee of K. Von Vallentsits, Vienna, Austria.
443,323. **Sponge Rubber.** Metallges. A. G., Frankfurt a. M., Germany.
443,470. **Carbon Black Dispersion.** Krebs Pigment & Color Corp., Wilmington, Del., U. S. A.
443,559. **Wetting Agent.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)
443,585. **Chlorinated Rubber Composition.** F. T. Walker, London, A. C. Hetherington. Ardrossan, and Imperial Chemical Industries, Ltd., London.
443,631 and 443,632. **Wetting Agent.** Coutts & Co., London, and F. Johnson, Eastbourne, (representatives of J. Y. Johnson). (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

Germany

630,981. **Porous or Microporous Object.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.

GENERAL

United States

2,041,695. **Shoe Form.** J. F. and E. B. Clark, both of Toronto, Ont., Canada.
2,041,704. **Steering Handle.** W. L. Gordon and H. L. Johnson, assignors to Johnson Bros. Engineering Corp., all of Waukegan, Ill.
2,041,737. **Rubber Article.** C. L. Beal, Cuyahoga Falls, assignor to American Anode, Inc., Akron, both in O.
2,041,738 and 2,041,739. **Steering Wheel.** C. W. Beck, assignor, by mesne assignments, to N. M. Beck, both of Toledo, O.
2,041,743. **Printing Plate Matrix.** T. C. Browne, Hinsdale, Ill.
2,041,750. **Tube.** A. G. Fitz Gerald, W. Newton, Mass.
2,041,760. **Elastic Article.** M. M. Harrison, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
2,041,781. **Fountain Pen Packing Unit.** S. M. Sager, Glencoe, Ill.
2,041,837. **Elastic Fabric.** F. P. Jecusco, Middletown, assignor to Chatham Mfg. Co., Portland, both in Conn.
2,041,842. **Cable.** R. F. Layton, Newark, N. J., assignor to Western Electric Co., Inc., New York, N. Y.
2,041,941. **Printing Plate Matrix.** W. Matuschke, Berlin-Hermsdorf, and E. Bläsing, Berlin, both in Germany.
2,041,946. **Closure Seal.** A. E. Nave, Evansville, Ind., assignor to Servel, Inc., New York, N. Y.
2,041,988. **Tire Repair Patch.** R. F. Wilson, assignor to Firestone Tire & Rubber Co., both of Akron, O.
2,041,991. **Shoe Shaper.** F. Calabrese, Brooklyn, N. Y.
2,042,029. **Rail Wiper.** C. D. Smith, Fairlawn, assignor to Firestone Tire & Rubber Co., Akron, both in O.
2,042,076. **Printers' Blanket.** W. M. Shultz, Eureka, Kan.
2,042,082. **Horse Collar Air Cushion.** L. L. Vardell, assignor, by direct and mesne assignments, of ¼ to J. H. Law and ¼ to J. B. Reasons, all of Puxico, Mo.
2,042,152. **Swimming Device.** T. J. Howland, Long Branch, N. J.
2,042,192. **Boys' Garment.** B. Rubin, Brooklyn, assignor to Eagle Boys Suit Corp., New York, both in N. Y.
2,042,239. **Toothbrush.** A. J. Planding, New York, N. Y.
2,042,255. **Holder and Wiper.** P. J. Haas, Chicago, Ill.
2,042,278. **Shower Bath Apparatus.** W. E. Sloan, Chicago, Ill.
2,042,372. **Vacuum Device.** R. A. Watson, Ashland, O.
2,042,377. **Tennis Court Paving.** A. K. Bamber, Brighton, England.
2,042,456. **Window Wiper.** J. W. Cain, Chicago, Ill.
2,042,515. **Storage Battery.** C. J. Dunzweiler, Cleveland, and A. C. Zachlin, S. Euclid, assignors to Willard Storage Battery Co., Cleveland, all in O.
2,042,522. **Tire.** D. Freeman, Honolulu, T. H.
2,042,548. **Telephone Accessory.** A. M. Peters, New York, N. Y.
2,042,580. **Cord Terminal Plug.** J. Bernfeld, Newark, N. J.
2,042,593. **Rupture Relief Belt.** L. A. Fritsch, Cincinnati, O.
2,042,596. **Pneumatic Suspension.** R. Gouirand, New York, N. Y.
2,042,606. **Variable Resister Unit.** P. Kotowski, assignor to Telefunken Gesellschaft für Drahtlose Telegraphie m. b. H., both of Berlin, Germany.
2,042,666. **Motor Mount.** B. D. Kunkle, assignor to General Motors Corp., both of Detroit, Mich.
2,042,680. **Electric Connecter.** W. G. Pontis, Dayton, O., assignor to General Motors Corp., Detroit, Mich.
2,042,692. **Rug Anchor.** D. B. Wurzburg, Grand Rapids, Mich.
2,042,908. **Hair Net.** L. J. F. Morins, Lyon, France.

2,042,910. **Compound Elastic Thread.** L. Silverman, Elkins Park, assignor to L. Silverman and H. B. Loeb, both of Philadelphia, all in Pa., a partnership trading as Silverman-Loeb Yarn Co.

2,042,931. **Directional Aerial Carrier System.** H. A. Ewen, Shenfield, England, assignor to Radio Corp. of America, a corporation of Del.

2,042,955. **Concrete Form Clamp.** E. P. Muntz, Hamilton, Ont., Canada.

2,043,011. **Rubber Suspension.** E. O. Schjolin, Pontiac, assignor to General Motors Corp., Detroit, both in Mich.

2,043,015. **Antishimmy and Road Shock Absorber.** L. W. Shutts, assignor to General Motors Corp., both of Detroit, Mich.

2,043,022. **Hat Holder.** C. W. Twite, New York, N. Y.

2,043,083. **Therapeutic Electrode and Plug.** F. C. Wappler, New York, N. Y.

2,043,097. **Colostomy Pad.** F. H. Frissell, Middletown, Conn.

2,043,134. **Rail-Highway Vehicle.** E. Wanamaker, Chicago, Ill.

2,043,186. **Nurser.** W. A. O'Dette, Garden City, Kan.

2,043,277. **Pressure Indicator.** J. H. Woodberry, United States Army, Ft. Bliss, Tex.

2,043,315. **Inner Tube Tread Stock.** M. C. Bacon, Garrettsville, O.

2,043,327. **Heat Exchanging Container.** T. W. Miller, assignor to Faultless Rubber Co., both of Ashland, O.

2,043,346. **Submarine Cable Loading Coil.** O. E. Buckley, Maplewood, N. J., assignor to Bell Telephone Laboratories, Inc., New York, N. Y.

2,043,350. **Centrifugal Machine.** E. A. Forsberg, Stockholm, Sweden, assignor to De Laval Separator Co., New York, N. Y.

2,043,358. **Horseshoe.** C. Swanstrom, Duluth, Minn.

2,043,359. **Horseshoe.** O. Swanstrom, Duluth, Minn.

2,043,380. **Tire Valve.** W. J. Kirkpatrick and F. G. Whittington, both of Garden City, N. Y., assignors, by mesne assignments, to Scovill Mfg. Co., Waterbury, Conn.

2,043,395. **Yarn Tensioner and Guider.** E. Scherdel, New York, N. Y.

2,043,396. **Arch Support.** J. P. Schnellbacher, Peoria, Ill.

2,043,400. **Conductor Cable.** W. T. Wells, assignor to Technicraft Engineering Corp., both of Los Angeles, Calif.

2,043,401. **Supporting and Conducting Cable.** W. T. Wells, Glendale, assignor to Technicraft Engineering Corp., Los Angeles, both in Calif.

2,043,405. **Thermo-Hydrometer.** L. Edelmann, assignor to E. Edelmann & Co., both of Chicago, Ill.

2,043,412. **Trap Plug.** H. Klein, Philadelphia, assignor to S. Silver, Glenside, both in Pa., trading as K-S Specialty Co.

2,043,538. **Garment Band.** H. Hardie, assignor to Faultless Mfg. Co., both of Baltimore, Md.

2,043,666. **Electric Connecter Plug.** F. B. Kingsbury, assignor to Whitney Blake Co., both of Hamden, Conn.

2,043,703. **Vehicle Guide.** D. W. Main, Oklahoma City, Okla.

2,043,718. **Nurser.** B. Tauf, assignor to I. S. Rosin, both of Chicago, Ill.

2,043,742. **Self-Retaining Lower Denture.** G. W. Fleischman, Long Beach, Calif.

2,043,745. **Fastener.** E. F. Gaines, Merion, assignor to Flexible Fastener Corp., Philadelphia, both in Pa.

2,043,751. **Garment Supporter.** M. Hawie, Greens Farms, assignor to Hawie Mfg. Co., Bridgeport, both in Conn.

2,043,769. **Record Tablet.** L. D. Norton, Bridgeport, Conn., assignor to Dictaphone Corp., New York, N. Y.

2,043,775. **Window Wiper.** J. J. Rosen, Brooklyn, N. Y.

2,043,882. **Douche.** C. W. Cheek, E. Chattanooga, Tenn.

2,043,934. **Hot Air Apparatus.** W. A. Spear, assignor to Victor Electric Products, Inc., both of Cincinnati, O.

2,043,935. **Curing Connection.** C. E. Stebbins, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, both in O.

2,043,954. **Storage Battery Separator.** W. E. Kershaw, Gwynedd Valley, assignor to Electric Storage Battery Co., Philadelphia, both in Pa.

2,044,023. **Engine Mounting.** R. S. Trott, Denver, Colo.

2,044,075. **Mop.** J. Jelenfy, New York, N. Y.

2,044,112. **Gum Massager.** E. T. Widmann, Washington, D. C.

2,044,187. **Adjustable Lamp Standard.** E. Schwarz, Alexandria, Ind., assignor to Mantle Lamp Co. of America, Chicago, Ill.

2,044,233. **Arch Supporting Wedge.** H. Wagner, Newark, N. J.

2,044,287. **Tire Inflater.** E. Frohwerk, Kansas City, Kan.

2,044,290 and 2,044,291. **Wiring Device.** A. E. Grant, assignor to Raylite Trading Co., Inc., New York, N. Y.

2,044,335. **Coupling.** E. Schulthess, S. Orange, N. J.

2,044,385. **Electric Motor Mounting.** H. D. Geyer, Dayton, O., assignor to General Motors Corp., Detroit, Mich.

2,044,392 and 2,044,393. **Joint.** H. C. Lord, Erie, Pa.

2,044,407. **Step Mat.** E. R. Smith, Blanchard, Pa.

2,044,479. **Brassiere Reshaper.** A. L. Livingston, Los Angeles, Calif.

2,044,520. **Soap Dish.** W. S. Weiant, Jr., Newark, O.

2,044,521. **Chin Strap and Hair Cap.** H. M. Weiland, Woodmere, and J. N. Furman, Brooklyn, both in N. Y.

2,044,523. **Corn or Bunion Preventer.** U. J. Bertram, Milwaukee, Wis.

2,044,649. **Engine Mounting.** B. A. Swennes, Rockford, Ill., and R. S. Trott, Denver, Colo.; said Swennes assignor to said Trott.

2,044,654. **Pneumatic Wheel.** M. O. Whited, near Centralia, Wash.

2,044,691. **Blood Collector.** B. Höflinger, Berlin, Germany.

2,044,713 and 2,044,714. **Engine Mounting.** R. S. Trott, Denver, Colo.

2,044,728. **Garter Grip.** J. Jacobs, Bridgeport, assignor to A. J. Donahue Corp., Milford, both in Conn.

Dominion of Canada

358,071. **Garment Supporter.** C. E. Byrne, Holliston, Mass., U. S. A.

358,113. **Exerciser.** W. Schenck, Long Island City, N. Y., U. S. A.

358,120. **Electrical Connecter.** R. E. Farish, Jr., Columbus, Ga., U. S. A.

358,130. **Double Check Valve.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of H. C. May, Jr., E. McKeesport, Pa., U. S. A.

358,161. **Tank Car.** General Chemical Co., New York, N. Y., assignee of M. D. Swords, Chicago, Ill., both in the U. S. A.

358,184. **Ice Bunker.** Union Asbestos & Rubber Co., assignee of Equipment Specialties Co., assignee of J. S. Lundvall, all of Chicago, Ill., U. S. A.

358,218. **Elastic Fabric.** C. Dreyfus, New York, N. Y., U. S. A.

358,227. **Wall Plug.** W. W. Hamill, Four Oaks, England.

358,231. **Corset.** M. Kahn, New York, N. Y., U. S. A.

358,237. **Electric Plug and Receptacle.** M. Pothier, Montreal, P. Q.

358,273. **Eyelash Curler.** Kurlash Co., Inc., assignee of W. R. Tuttle and C. W. Stickel, co-inventors, all of Rochester, N. Y., U. S. A.

358,306. **Weatherstrip.** D. H. Harnly, Chicago, Ill., U. S. A.

358,307. **Exerciser.** L. M. Jacks, London, England.

358,330. **Shoe.** J. H. Everston, Milwaukee, Wis., U. S. A.

358,351. **Horse Cleaner.** F. Walters, Parkstone, England.

358,407. **Bottle Stoppering Machine.** La Société Les Fils de P. Bardinet, assignee of E. Bardinet, both of Bordeaux, France.

358,435. **Thermal Seal.** Wingfoot Corp., Wilmington, Del., assignee of W. C. Calvert, Cuyahoga Falls, O., both in the U. S. A.

358,437. **Valve Stem Assembly.** J. Ingram, Clarkelen, inventor, and C. M. Reynolds, Savageton, assignee of ⅓ of the interest, both in Wyo., U. S. A.

358,456. **Articulated Mat.** Wingfoot Corp., Wilmington, Del., assignee of H. R. Russon, Akron, O., both in the U. S. A.

358,458. **Form Roll Drive.** Wood Newspaper Machinery Corp., assignee of H. A. Wise Wood, both of New York, N. Y., U. S. A.

358,520. **Wiper.** D. A. & H. Corp., New York, assignee of D. C. Abdelnour, Port Chester, both in N. Y., U. S. A.

358,526. **Fountain Pen Feed.** Eclipse Fountain Pen & Pencil Co., Ltd., Toronto, assignee of W. B. Dilly, Galt, both in Ont.

358,584. **Horseshoe.** A. G. Craft, S. Kensington, N. S. W., Australia.

358,587. **Automobile Wheel Snowchain.** E. G. Ericsson, Verkebäck, Sweden.

United Kingdom

441,950. **Cow Milker.** Dronsfield Bros., Ltd., and W. B. Dronsfield, of Oldham.

442,022. **Battery.** Three Star Accumulators, Ltd., and F. C. Grund, both of London.

442,069. **Teething Ring.** J. Fromm, Berlin, Germany.

442,091. **Optical Apparatus.** A. Krummer, Berlin, Germany.

442,105. **Massager.** R. T. Tarrant, Napton.

442,147. **Tire.** J. S. Withers, London. (J. H. Maynard and R. Brown, both of Newmarket, Brisbane, Australia.)

442,224. **Gas Mask.** C. J. Gordon, London.

442,235. **Golf Practicer.** H. Mote, London.

442,241. **Golf Practicer.** A. H. Coleman, H. Ward, and A. Raymond, all of London.

442,243. **Table Game.** C. R. Lederrey, London, W. E. Warrilow, Oxhey; V. S. Knight, London, and H. Bromfield, Tilehurst.

442,262. **Fountain Pen.** W. Livsey, Liverpool.

442,263. **Draught Excluder.** Fiat Soc. Anon., Turin, Italy.
442,378. **Chains and Chain Fabric.** H. Wiechmann, Berlin, Germany.
442,405. **Golf Club.** A. G. Spalding & Bros. (British), Ltd., London, assignee of W. F. Reach, Chicopee, Mass., U. S. A.
442,461. **Pipe Connecter.** R. Surridge, Beckenham.
442,480. **Door Fastening.** Fiat Soc. Anon., Turin, Italy.
442,531. **Microphone.** H. J. Round, London.
442,535. **Swiveling Coupling.** E. C. G. Corneliusen, Freshfield.
442,552. **Glazing Window Frame.** H. L. Sleigh, A. S. Cheston, and F. J. Stuart, all of Birmingham.
442,588. **Anglers' Fly Box.** J. Parker-Rhodes, Bawtry.
442,591. **Vehicle Spring Suspension.** A. Neiman, Cologne, Germany.
442,595. **Constructional Toy.** G. Hamerschlag, Vienna, Austria.
442,597. **Cask Tapper.** F. J. T. Barnes, Newstead, Brisbane, Australia.
442,609. **Woven Elastic Fabric.** D. R. H. Williams, Huddersfield.
442,617. **Paper Bag Apparatus.** A. H. Stevens, London. (Shellmar Products Co., Chicago, Ill., U. S. A.)
442,630. **Sliding Window.** H. L. Sleigh, A. S. Cheston, and F. J. Stuart, all of Birmingham.
442,648. **Fountain Pen.** Stylocalcul Soc. Anon., Strasbourg, France.
442,665. **Surgical Truss.** F. P. Whitehead (trading as F. Whitehead & Co.), London, and J. J. Kearns, Manchester.
442,725. **Respirator.** J. A. Sadd, Porton.
442,727. **Coated Fabric.** Deutsche Gold- Und Silber-Scheideanstalt Vorm. Roessler, Franfurt a. M., Germany.
442,750. **Paper Bag for Coke.** Low Temperature Carbonisation, Ltd., J. H. Stephens, and C. W. R. Gorrill, all of London.
442,756. **Driving Dynamo.** F. J. Miller, Sutton Coldfield.
442,785. **Seat Back Cushion.** Morris Commercial Cars, Ltd., Birmingham, and Lord W. R. Morris Nuffield, Oxford.
442,790. **Diaphragm Valve.** Saunders Inventions, Ltd., Johannesburg, South Africa, and P. K. Saunders, Wolverhampton.
442,805. **Tennis Ball.** W. W. Triggs, London. (Felters Co., Boston, Mass.)
442,845. **Resilient Mounting.** Michelin & Cie., Clermont Ferrand, France.
442,868. **Bucket.** H. G. W. Chichester-Miles, Westminster.
442,995. **Soap Holder.** F. Petric, London.
443,019. **Tire Inflater.** G. A. Cotton, Hebden Bridge.
443,080. **Resilient Mounting.** T. C. English, Belfast, Ireland.
443,085. **Window Fastening.** H. Tarrant, Sydney, Australia, and F. Collins, Wellington, New Zealand.
443,156. **Impervious Belt.** Soc. Des Procedes Ecla (formerly Filastic), Paris, France.
443,202. **Sound Nonconducting Covering.** Vereinigte Aluminium Werke A. G., Lausitz, Germany.
443,206. **Tennis Racket.** C. F. Barratt and A. V. Ibbitson, both of London.
443,216. **Typewriter Type Cleaner.** S. Wulfson, Angmering-on-Sea.
443,228. **Golf Club Handgrip.** E. R. Whitcombe, Bournemouth.
443,261. **Vehicle Body.** W. R. Black, London, and A. C. Needs, Kew.
443,296. **Tire.** T. B. McLeroth, Hadley Wood.
443,345. **Fishing Rod Anchorage.** V. J. Cumming, Glasgow, Scotland.
443,406. **Doll.** M. Wittmann, New York, N. Y., U. S. A.
443,427. **Non-skid Tire.** B. P. Gray, Birmingham.
443,439. **Golf Club.** G. E. Bowser and W. Harding, both of Leicester.
443,523. **Mop.** M. Swales, Birmingham.
443,676. **Composite Flooring.** Agasote Millboard Co., Ewing Township, N. J., U. S. A.
443,677. **Tire.** Michelin & Cie., Clermont Ferrand, France.
443,678. **Tire.** Soc. Italiana Pirelli, Milan, Italy.
443,711. **Massager.** Gro-Flex Corp., Indianapolis, Ind., U. S. A.
443,862. **Tire Tread.** Dunlop Rubber Co., Ltd., London, and W. E. Hardeman, Birmingham.
443,975. **Endless Belt Conveyer.** H. H. Thompson and A. E. Davies, both of Birmingham.

Germany

631,972. **Inflatable Toy.** Ungarische Gummiwarenfabriks A.G., Budapest, Hungary. Represented by H. Scheidegger, Berlin.
632,154. **Belting Ply Adhesive.** H. auf der Horst, Dortmund-Horde.

TRADE MARKS

United States

335,713. **Steam Welded.** Balls. J. De Beer & Son, Albany, N. Y.
335,824. **Continental.** Combs and hair ornaments. Continental Gummi-Werke A. G., Hanover, Germany.
335,829. **Trio.** Dental supplies including gutta percha. A. Gysi, Zurich, Switzerland.
335,838. **Action Bak.** Suspenders. Hickok Mfg. Co., Rochester, N. Y.
335,849. **Streamline.** Combs. American Hard Rubber Co., Hempstead, N. Y.
335,866. **Curodex.** Rubber products deodorizers and odorants. W. J. Bush & Co., Inc., New York, N. Y.
335,921. **Executive Model.** Toy wagons. General Tire & Rubber Co., Akron, O.
336,019. Representation of a star within a wreath, and below it a facsimile signature of Miss Didrikson: **"'Babe' Didrikson."** Golf balls and clubs. P. Goldsmith Sons Co., Cincinnati, O.
336,032. **Executive Model.** Tires. General Tire & Rubber Co., Akron, O.
336,042. **Korolac.** Electrical conductor insulating compositions. B. F. Goodrich Co., Akron, O.
336,065. **Patrol.** Prophylactic rubber goods. M. H. Wilson, doing business as Wilson Rubber Co., Allston, Mass.
336,101. **Mobiltire.** Tires. Socony-Vacuum Oil Co., Inc., New York.
336,169. **Beauty Glow.** Latex bath brushes. H. L. Welker, Williamsport, Pa.
336,178. Representation of two babies playing tug-o'-war with a pair of baby pants. Latex baby pants. International Latex Corp., Rochester, N. Y.
336,200. Fanciful label containing representation of a bell and two horns and the words: **"Bell Horn Quality. 1842."** Trusses, abdominal supporters, elastic hosiery, etc. Wm. H. Horn & Bro., Inc., Philadelphia, Pa.
336,205. **Spunflex.** Elastic yarn and thread. Harris Textile Machinery Corp., Providence, R. I.
336,206. **Flexspun.** Elastic yarn and thread. Harris Textile Machinery Corp., Providence, R. I.
336,271. **Pharis' Mudgripper.** Tires and tubes. Pharis Tire & Rubber Co., Newark, O.
336,282. **Caravan.** Tires and tubes. Spiegel, May, Stern Co., Inc., Chicago, Ill.
336,283. **Escort.** Tires and tubes. Spiegel, May, Stern Co., Inc., Chicago, Ill.
336,356. **Not-A-Splice.** Rubber and cotton duck belting. Home Rubber Co., Trenton, N. J.

EASTERN

(*Continued from page* 53)

trolling instruments for temperature, pressure, level, flow, etc., Park and Nostrand Aves., Brooklyn, N. Y., has announced the promotion of A. F. Rucks to the position of general manager. He has been with the company more than 23 years. The company also has named W. C. Bennett general sales manager in charge of the eastern territories, and E. D. Wacker general sales manager in charge of the western territories. Both Messrs. Bennett and Wacker will spend a considerable portion of their time in the field.

Herron & Meyer, Inc., 82 Beaver St., New York, N. Y., recently entered into an agreement with H. M. Royal, Inc., Trenton, N. J., to represent it on the sale of Gastex Carbon Black in the Trenton territory.

Dunlop Tire & Rubber Corp., River Rd. and Sheridan Dr., Buffalo, N. Y., now employs about 1,800 workers, with business good. Dunlop, besides making tires, golf and tennis balls, and other sporting goods, is now marketing a new type of spongy rubber used in cushions, mattresses, etc.

ARGENTINA

A 600% increase was registered by the Argentine rubber manufacturing industry in the period 1930 to 1935, as indicated by takings of crude rubber, according to Assistant Trade Commissioner Joe D. Walstrom, at Buenos Aires. In 1930 Argentina purchased rubber articles from foreign countries to the value of 51,517,000 pesos, but in 1935 such imports had declined to 7,787,000 pesos. Imports of crude rubber in 1930 totaled 776,900 kilos and in 1935, 5,535,900 kilos. Argentine tire imports during the same period also reflect the great activity of the rubber manufacturing industry and its ability to supply domestic consumption requirements, declining from 5,523,723 kilos in 1930 to 634,584 in 1935, about 89%; imports of inner tubes also decreased in about the same proportion, from 711,876 to 40,294 kilos. It has been estimated that the Argentine rubber manufacturing industry employs over 5,600 persons at present.

Market Reviews

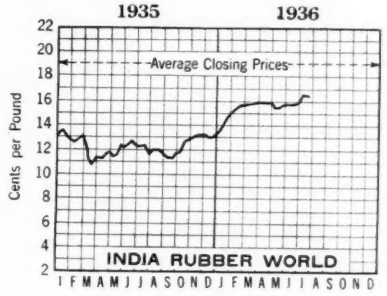
CRUDE RUBBER

New York Quotations

New York outside market rubber quotations in cents per pound

	July 27, 1935	June 27, 1936	July 27, 1936
Paras			
Upriver fine	9¾	17½	19½
Upriver fine	*12¼	*22¼	*24
Upriver coarse	..	11¾	12½
Upriver coarse	*11¼	*16¾	*17½
Islands fine	11¼	18¼	19¼
Islands fine	..	*22½	*24
Acre, Bolivian fine	10	17¾	19¼
Acre, Bolivian fine	*12½	*22½	*24
Beni, Bolivian	10¼	18¾	19½
Madeira fine	10	17½	19½
Caucho			
Upper ball	..	11¾	12¼
Upper ball	*11¼	*16¾	*17½
Lower ball	..	11¾	12½
Pontianak			
Bandjermasin	6½	6¼	6
Pressed block	9½/11	12½	10/20
Sarawak	6½	6½	6
Guayule			
Duro, washed and dried	12	13½	13½
Ampar	13	14	14
Africans			
Rio Nuñez	12	14⅜	14½
Black Kassai	10	14½	15½
Prime Niger flake	25	27	27
Gutta Percha			
Gutta Siak	10¾/11	11	11
Gutta Soh	13 /13½	12¾	13½
Red Macassar	1.25	1.10	1.10
Balata			
Block, Ciudad Bolivar	30	27	30
Manaos block	26	25	26
Surinam sheets	35	33	31
Amber	38	34	36

*Washed and dried crepe. Shipments from Brazil.



New York Outside Market—Spot Ribbed Smoked Sheets

Commodity Exchange

TABULATED WEEK-END CLOSING PRICES

Futures	May 30	June 27	July 4	July 11	July 18	July 25
June	15.58	.....	.....	.....	.....	.....
July	15.61	13.96	16.33	16.65	16.35	16.29
Sept.	15.71	16.10	16.48	16.71	16.46	16.32
Dec.	15.81	16.22	16.57	16.81	16.56	16.42
Mar.	15.92	16.32	16.68	16.90	16.64	16.52
May	.....	16.43	16.77	17.00	16.74	16.62
June	.....	.....	16.81	17.05	16.79	16.66
Volume per week (tons)	.. 3,290	10,140	8,750	9,640	5,070	4,000

THE data of the above table show the firm upward price trend of representative future contracts during approximately the last two months.

From July 1 to 11 spot ribbed smoked sheets moved up from 16 15/16¢ to 16 11/16¢ a pound. The factors influencing this rise were the report of May import tonnage figures; the increase of the Dutch tax to restrict exports of native grown rubber. This is the only means at present available to the Government of the Dutch East Indies for control of such rubber exports. This export tax is being so strongly opposed that a new system of native rubber control is now being evolved. Under this system native growers will come under the same system of individual export quotas as the rubber estates. The new system is expected to be in effect in 1937. Meantime the sliding export duty will serve its purpose.

During the latter half of July prices sagged slowly because of prospective renewal of labor troubles in the Akron district which occasioned speculative selling and brought the price of spot down to 16½¢ per pound. News of a six weeks' labor truce in Akron steadied the market on the twentieth and brought the price up to 16 15/16¢.

The rate of consumption reported for June was an influential factor promoting the later price advance. According to R.M.A. statistics June consumption of crude rubber reached the all-time high of 52,636 tons. This is the third month in succession that United States consumption of crude rubber exceeded 50,000 tons and the

New York Outside Market—Spot Closing Prices—Plantation Grades—Cents per Pound

	June, 1936							July, 1936														
	22	23	24	25	26	27*	29	30	1	2	3	4†	6	7	8	9	10	11*	13	14	15	16	17	18*
No. 1 Ribbed Smoked Sheet	15 11/16	16 1/16	16 1/16	16 3/16	16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 3/16	16 1/16	..	16 3/16	16 3/16	16 3/16	16 1/16	16 1/16	..
No. 2 Ribbed Smoked Sheet	15 7/8	16	16	16 1/16	15 15/16	..	16	16 1/16	16 1/16	16 1/16	16 3/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 3/16	..	16 1/16	16 1/16	16 1/16	16 3/16	16 3/16	..
No. 3 Ribbed Smoked Sheet	15 11/16	15 15/16	15 15/16	16	15 7/8	..	15 15/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 3/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..
No. 4 Ribbed Smoked Sheet	15 3/4	15 7/8	15 7/8	15 15/16	15 11/16	..	15 7/8	16	16	16 1/16	16 1/16	..	16 3/16	16 1/16	16 3/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..
No. 1 Thin Latex Crepe	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 3/16	16 1/16	16 1/16	16 5/16	16 3/16	..	16 7/16	16 3/16	16 7/16	17	17 1/16	..	17 1/16	17 1/16	17 1/16	16 7/16	16 7/16	..
No. 1 Thick Latex Crepe	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 3/16	16 1/16	16 7/16	16 5/16	16 3/16	..	16 7/16	16 3/16	16 7/16	17	17 1/16	..	17 1/16	17 1/16	17 1/16	16 7/16	16 7/16	..
No. 1 Brown Crepe	15 15/16	16 1/16	16 1/16	16 1/16	15 15/16	..	16	16 1/16	16 1/16	16 1/16	16 3/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 3/16	16 3/16	..
No. 2 Brown Crepe	15 3/16	16	16	16	15 3/16	..	15 15/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 3/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 3/16	16 3/16	..
No. 2 Amber	15 15/16	16 1/16	16 1/16	16 1/16	15 15/16	..	16	16 1/16	16 1/16	16 1/16	16 3/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 3/16	16 3/16	..
No. 3 Amber	15 3/16	16	16	16	15 3/16	..	15 15/16	16 1/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 3/16	16 1/16	16 1/16	16 1/16	..	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..
No. 4 Amber	15 3/4	15 7/8	15 7/8	15 7/8	15 3/4	..	15 15/16	15 15/16	15 15/16	16 1/16	16 1/16	..	16 1/16	16 1/4	16 1/16	16 3/16	16 1/16	..	16 3/16	16 3/16	16 3/16	16 1/16	16 1/16	..
Rolled Brown	15 1/2	15 5/8	15 5/8	15 5/8	15 1/2	..	15 1/16	15 1/16	15 1/16	15 1/16	15 1/16	..	16 1/16	16	16 1/16	16 1/8	16 1/16	..	16 1/8	16 1/8	16 1/8	15 15/16	15 15/16	..

* Closed. †Holiday.

New York Outside Market (Continued)

	July, 1936					
	20	21	22	23	24	25*
No. 1 Ribbed Smoked Sheet	16 1/16	16 1/16	16 1/16	16 1/16	16 3/16	..
No. 2 Ribbed Smoked Sheet	16 1/16	16 1/16	16 1/16	16 3/16	16 1/16	..
No. 3 Ribbed Smoked Sheet	16 1/16	16 1/16	16 3/16	16 1/16	16 1/16	..
No. 4 Ribbed Smoked Sheet	16 3/16	16 3/16	16 1/16	16 1/16	16 1/16	..
No. 1 Thin Latex Crepe	17	17	16 15/16	16 7/16	16 15/16	..
No. 1 Thick Latex Crepe	17	17	16 15/16	16 7/16	16 15/16	..
No. 1 Brown Crepe	16 1/16	16 1/16	16 1/16	16 3/16	16 1/16	..
No. 2 Brown Crepe	16 1/16	16 1/16	16 3/16	16 1/16	16 1/16	..
No. 2 Amber	16 1/16	16 1/16	16 1/16	16 3/16	16 1/16	..
No. 3 Amber	16 1/16	16 1/16	16 3/16	16 1/16	16 1/16	..
No. 4 Amber	16 1/16	16 1/16	16 1/16	16 1/16	16 1/16	..
Rolled Brown	16 1/16	16 1/16	16	15 15/16	15 7/8	..

*Closed.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
*1,035	Druggists' sundries	Brussels, Belgium
†1,049	Soles and heels	Lagos, Nigeria
‡1,116	Druggists' sundries	Toronto, Canada
*1,127	Rubber sheets or cloth	Santiago, Chile
*1,128	Glue-backed sponge rubber material	Copenhagen, Denmark
*1,129	Wire insulating rubber strips	Paris, France

*Purchase. †Agency. ‡Purchase and agency.

fourth time that this amount has been exceeded.

New York Outside Market

Prices in the outside market for spot ribbed smoked sheets moved slowly upward from 16⅞¢ to 16¹¹⁄₁₆¢ per pound with fair to good activity in factory buying up to the middle of the month. The price on the Exchange due to anticipated labor trouble in Akron caused practical suspension of factory buying interest for a brief period. It revived somewhat as prices began recovery when the Akron labor truce of six weeks served to steady the rubber market.

The week-end closing prices on No. 1 ribbed smoked sheets for the past several weeks were: June 6, 15¹¹⁄₁₆¢; June 13, 15¾; June 20, 15⅞; June 27, 16; July 4, 16⅛; July 11, 16¹¹⁄₁₆; July 18, 16⅜; July 25, 16⅜.

RUBBER SCRAP

THE demand for all grades of scrap is improving. Boots and shoes remain firm and unchanged in price.

Inner tubes of all grades are in active demand : prices unchanged from last month except for red, which advanced ⅛¢ a pound. Tube collections are coming in rather slowly.

Pneumatic and solid tires are quoted the same as one month ago. The steady movement into consuming channels is improving in volume.

Mechanicals of the lower qualities in black are quoted unchanged. Red and white qualities have advanced sharply because of increased demand for light colored reclaims to economize on crude where possible.

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

July 27, 1936

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01 /$0.01⅛
Colored	lb.	.00¾/ .00⅞
Untrimmed arctics	lb.	.00¾/ .00⅞
Inner Tubes		
No. 1, floating	lb.	.11 / .11½
No. 2, compound	lb.	.04⅛/ .04¼
Red	lb.	.04⅛/ .04¼
Mixed tubes	lb.	.04 / .04⅛
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	8.75 / 9.00
Beadless	ton	12.50 /12.75
Auto tire carcass	ton	14.00 /16.00
Black auto peelings	ton	15.00 /16.00
Solid		
Clean mixed truck	ton	33.00 /34.00
Light gravity	ton	37.00 /38.00
Mechanicals		
Mixed black scrap	ton	14.50 /15.00
Hose, air brake	ton	18.00 /20.00
Garden, rubber covered	ton	14.00 /15.00
Steam and water, soft	ton	14.00 /15.00
No. 1 red	lb.	.03 / .03¼
No. 2 red	lb.	.02¾/ .03
White druggists' sundries	lb.	.04½/ .05
Mechanical	lb.	.03¾/ .04
Hard Rubber		
No. 1 hard rubber	lb.	.12 / .12½

IMPORTS, CONSUMPTION, AND STOCKS

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Imports* Tons	U. S. Consumption Tons	U. S. Stocks Mfgrs., Importers, Dealers, Etc.† Tons	U. S. Stocks Afloat† Tons	U. K.— Public Warehouses, London, Liverpool†‡ Tons	Singapore and Penang Dealers and Port Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1933	411,615	401,079	365,000	55,606	86,505	44,884	853,500	798,900	616,370
1934	469,484	453,223	355,000	47,644	134,927	62,142	1,019,200	959,600	681,362
1935									
January	42,059	46,636	349,446	42,066	148,337	59,609	77,861	89,216	674,316
February	35,383	42,720	340,264	42,969	155,727	57,586	75,311	90,494	659,649
March	44,041	42,153	340,284	44,485	162,012	55,100	66,503	88,032	654,243
April	43,545	44,247	337,586	37,651	165,064	48,827	75,411	80,261	653.103
May	26,866	41,101	322,558	44,375	167,745	54,740	78,230	71,543	652,265
June	38,340	36,156	324,218	55,581	171,303	51,770	74,702	66,394	652,327
July	46,880	35,917	334,692	49,018	174,227	49,958	71,298	79,719	659,318
August	38,655	38,775	334,106	47.724	177,250	46,482	76,265	80,645	662,409
September	34,569	37,086	331,121	43,413	174,894¶	33,872	74,279	71,290	643,560
October	34,356	41,969	322,857	49,913	168,570	37,597	74,380	70,695	632,370
November	28,826	42,310	308,993	46,588	166,896	32,597	64,693	63,568	602,548
December	34,596	42,474	303,000	39,094	164,295	28,304	63,789	79,421	586,282
1936									
January	31.292	48,506	285,054	43.870	162,107	31,195	62,720	66,182	566,852
February	35,219	36,746	282,902	46,532	157,028	38,421	64,023	59,521	569,550
March	37,451	42,703	276,823	58.935	147,712	29,322	69,213	61,488	548,721
April	40,365	51,897	264,228	47,678	140,404	32,200	60,100	71,560	524,655
May	35,600	50,482	248,317	48,860	130,590	26,687	68,909	.....	499,116
June	41,802	52,636	245,886	47,228	.....	.....	.....	.....	.....

*Including liquid latex. †Stocks on hand the last of the month or year. ‡Statistical Bulletin of the International Rubber Regulation Committee. §Stocks at U. S. A., U. K., Singapore and Penang, Para, Manaos, and afloat. ¶Including an adjustment of 2,650 tons for loss by fire at Colonial Wharf

CRUDE rubber consumption by United States manufacturers for June, 1936, is estimated at 52,636 long tons, against 50,482 long tons for May, approximately 4.3% over May and 45.6% above the June, 1935, revised figure of 36,156 long tons, according to the R.M.A.

Crude rubber imports for June totaled 41,802 long tons, 17.4% over the May figure of 35,600 long tons and 9% above the 38,340 long tons imported in June, 1935.

The estimated total domestic stocks of crude rubber on hand June 30 were 245,886 long tons, compared with May 31 stocks of 248,317 long tons and 324,218 (revised) long tons on hand June 30, 1935.

Crude rubber afloat to United States ports on June 30 is estimated at 47,228 long tons against 48,860 long tons afloat on May 31 and 55,581 long tons afloat on June 30, 1935.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
June 27	56,146	66,554
July 4	55,078	65,779
July 11	53,497	65,598
July 18	51,943	65,032
July 25	50,003	64,373

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for June, 1936:

Rubber Exports: Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham

To	June, 1936 Sheet and Crepe Rubber Tons	June, 1936 Latex, Concentrated Latex, Revertex, and Other Forms of Latex Tons
United Kingdom	2,732	371
United States	23,122	532
Continent of Europe	5,653	394
British possessions	3,647	90
Japan	3,146	20
Other countries	329	13
Totals	38,629	1,420

Rubber Imports: Actual, by Land and Sea

From	June,1936 Dry Rubber Tons	June,1936 Wet Rubber (Dry Weight) Tons
Sumatra	3,649	2,492
Dutch Borneo	3,127	67
Java and other Dutch islands	122	2
Sarawak	1,384	...
British Borneo	227	7
Burma	496	28
Siam	1,925	1,187
French Indo-China	68	136
Other countries	99	10
Totals	11,097	3,929

Colombia

Rubber products manufactured in Colombia are rubber heels, canvas rubber-soled footwear, novelties, toys, and small quantities of rubberized cloth and clothing, as leggings, aprons, automobile topping, tents, and rubber bed sheeting. Heel production, probably the most important, is believed the largest crude rubber consumer. Rubber-soled canvas shoe and slipper producers utilize crude rubber and old automobile tires; while the novelties and toy group may be classed a "cottage industry" wherein only local crude rubber is employed.

Crude rubber imports by Colombia follow: 1931, 289 kilos; 1932, 553; 1933, 3,278; 1934, 106; 1935, 546 kilos.

Exports of balata by Colombia follow: 1931, 63,728 kilos; 1932, 76,252; 1933, 61,012; 1934, 63,331; 1935, 57,836 kilos. Exports of perillo: 1931, 186,655 kilos; 1932, 95,463; 1933, 56,248; 1934, 6,428; 1935, 16,690 kilos.

COTTON AND FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	May 30	June 27	July 4	July 11	July 18	July 25
June	11.57	.....	.....	.....	.....	.....
July	11.57	12.39	12.39	13.49	13.02	.....
Sept.	11.04	12.12	11.98	12.82	12.32	12.65
Dec.	10.47	11.69	11.73	12.67	12.12	12.40
Mar.	10.50	11.70	11.79	12.65	12.13	12.41
May	10.45	11.74	11.83	12.65	12.12	12.37
June	.....	.....	.....	.....	.....	.....

THE accompanying table gives the general trend of representative cotton futures for approximately the last two months. Spot middlings from June 6 to July 25 advanced from 11.78 to 13.30c a pound.

The Government places this season's cotton acreage at 30,621,000. Crop conditions indicate a yield below average of 11,217,000 bales.

From the demand standpoint, it appears consumption of cotton for this season will reach 12,500,000 to 12,600,000 bales, or about 2,000,000 more than the season's crop, and that the carryover will be cut to the neighborhood of 7,000,000 of which 3,500,000 are held by the Government under loans.

Concerning the season now drawing to a close the Cotton Exchange Service reported: "A preliminary analysis of the record-breaking consumption of all cottons by the world this season—totaling around 27,000,000 bales compared with a previous high of 25,778,000—indicates that it is due to a partial recovery of consumption from depression lows by the United States, Great Britain, and the Continent, exclusive of Russia, combined with very high consumption by the Orient—although consumption by the Orient is somewhat less this season than last season—and in conjunction also with new high records of consumption by Russia and the numerous consuming countries grouped under the heading 'Elsewhere.'"

Fabrics

The cotton market outlook as recorded for the past two months in these columns has been realized by subsequent market developments. Cotton goods have proved attractive to those who judged them on the basis of replacement values within the 60-day period referred to in June. The volume of business that came into the market following the political conventions was quite extraordinary, and activity was accelerated by added demand of widely scattered sources up to the close of the third week in July.

The price of raw cotton is ranging now from 14 to 14½¢ a pound; yet fabrics are still priced on virtually the same basis or lower than those current late in January and in February when raw cotton averaged 12½¢ a pound.

Until more is known as to the size of the 1936 cotton crop a quiet cloth market is expected. When definite crop figures are available, the demand for fabrics in volume will be renewed and continue through next October. Cotton fabric mill inventories are at the lowest point in several years.

New York Quotations

July 27, 1936

Drills

38-inch 2.00-yard	yd.	$0.14⅜
40-inch 3.47-yard		.08⅞
50-inch 1.52-yard		.19¼
52-inch 1.85-yard		.16¾
52-inch 1.90-yard		.15¼
52-inch 2.20-yard		.14
52-inch 2.50-yard		.12½
59-inch 1.85-yard		.15¾

Ducks

38-inch 2.00-yard D. F.	yd.	.14½
40-inch 1.45-yard S. F.		.19¾
51¼-inch 1.35-yard D. F.		.20¾
72-inch 1.05-yard D. F.		$0.28½/.29
72-inch 17.21-ounce		.32¾

MECHANICALS

Hose and belting	lb.	.28½

TENNIS

52-inch 1.35-yard	yd.	.21⅜

***Hollands**

GOLD SEAL

20-inch No. 72	yd.	.09
30-inch No. 72		.17¼
40-inch No. 72		.18

RED SEAL

20-inch	yd.	.08¼
30-inch		.15¾
40-inch		.16½
50-inch		.21

Osnaburgs

40-inch 2.34-yard	yd. .11⅛/	.12½
40-inch 2.48-yard	.10½/	.11½
40-inch 2.56-yard		.10⅛
40-inch 3.00-yard		.09⅝
40-inch 7-ounce part waste		.10
40-inch 10-ounce part waste		.14
37-inch 2.42-yard		.12⅝

Raincoat Fabrics

COTTON

Bombazine 60 x 64	yd.	.08¾
Plaids 60 x 48		.11½
Surface prints 60 x 64		.12½
Print cloth, 38½-inch, 60 x 64		.06

SHEETINGS, 40-INCH

48 x 48, 2.50-yard	yd.	.09½
64 x 68, 3.15-yard		.09⅝
56 x 60, 3.60-yard		.08
44 x 40, 4.25-yard		.06½

SHEETINGS, 36-INCH

48 x 48, 5.00-yard	yd.	.05⅞
44 x 40, 6.15-yard		.04¾

Tire Fabrics

BUILDER

17¼ ounce 60" 23/11 ply Karded peeler	lb.	.31½

CHAFER

14 ounce 60" 20/8 ply Karded peeler	lb.	.29½
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.30½

CORD FABRICS

23/5/3 Karded peeler, 1 1/16" cotton	lb.	.30½
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.28½
23/5/3 Karded peeler, 1¼" cotton	lb.	.34½
23/5/3 Combed Egyptian	lb.	.46½

LENO BREAKER

8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.30½

*For less than 1,000 yards of a width add 10% to given prices.

RECLAIMED RUBBER

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption % to Crude	U. S. Stocks*	Exports
1934	110,010	100,597	22.3	23,079	4,737
1935	122,140	113,530	22.9	25,069	5,383
1936					
January	11,665	10,039	20.7	26,145	572
February	10,188	7,366	20.0	28,267	455
March	10,712	8,767	20.5	29,161	591
April	11,382	10,333	19.9	22,274	589
May	11,512	10,396	20.6	22,852	635
June	11,935	11,548	21.9	22,738	...

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

RECLAIM production continues to advance month by month, although not at a very rapid rate. Consumption is making steady monthly gains at a rate practically parallel to that of production. Correspondingly advances are noted also in the ratio of reclaim consumption to crude and in United States stocks on hand. This statistical position reflects the improved demand for rubber products being felt in all lines of the industry.

Prices are quoted unchanged on all basic grades of reclaim and are still favorable for manufacturers desirous of covering their requirements for the balance of the year.

New York Quotations

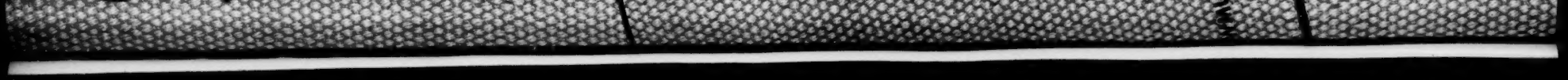
July 27, 1936

	Sp. Grav.	¢ per lb.
Auto Tire		
Black Select	1.16-1.18	5 / 5¼
Acid	1.18-1.22	6 / 6¼
Shoe		
Standard	1.56-1.60	6¼/ 6¾
Tube		
No. 1 Floating	1.00	14 /14¼
Compounded	1.10-1.12	7¼/ 7½
Red Tube	1.15-1.30	7¼/ 7¾
Miscellaneous		
Mechanical Blends	1.25-1.50	3½/ 4¼
White	1.35-1.50	9¼/10¼

The above list includes those items or classes only that determine the price basis of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

Z. M. L.

Z. M. L., a mercaptobenzothiazole zinc salt-zinc laurate mixture gives self-activating non-discoloring acceleration for steam, air, or mold cured stocks.



SHAWMUT

HOSE AND BELTING DUCK

Fabrics for the Rubber Industries

For many years SHAWMUT hose and belting ducks have been meeting the most rigid specifications of engineers and purchasing agents of the rubber and allied industries. Our modern textile laboratories are available to manufacturers to assist in developing new fabrics to solve new industrial problems.

SHAWMUT A 14

SHAWMUT A 32

WELLINGTON SEARS CO.

65 WORTH STREET NEW YORK CITY

World Net Imports of Crude Rubber

Year	U.S.A.	U.K.	Australia	Belgium	Canada	Czecho-slovakia	France	Germany	Italy	Japan	Russia	Rest of the World	Total
1933	398,400	73,300	13,500	11,200	19,300	10,400	63,100	54,100	19,300	66,900	30,800	38,600	798,900
1934	439,100	158,500	9,600	9,100	28,400	11,000	50,400	59,300	21,400	69,900	47,300	55,600	959,600
1935	455,757	128,829	9,977	7,593	26,868	11,225	52,322	62,901	23,916	57,589	37,576	56,725	931,278
1936													
Jan.	33,260	4,573	1,260	760	1,758	767	6,770	5,545	1,500*	4,357	467	5,165	66,182
Feb.	33,789	1,271	735	779	1,900	344	6,288	5,257	1,000*	2,787	94	5,277	59,521
Mar.	33,743	1,227	819	1,033	1,809	410	4,342	4,568	1,000*	5,172	4,376	5,443	61,488
Apr.	44,949	2,097	969	1,097	1,079	603	4,260	5,497	1,000*	4,931	4,500*	4,772	71,560

* Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

U. S. Crude and Waste Rubber Imports for 1936

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1936	Totals 1935	Balata	Miscellaneous	Waste
Jan. .....*tons*	29,130	1,263	597	167	65	70	..	31,292	42,059	20	870	122
Feb.	33,203	1,146	550	217	28	75	..	35,219	35,383	95	665	184
Mar.	35,675	1,296	390	35	15	40	..	37,451	44,041	60	620	142
Apr.	38,286	1,324	559	75	21	100	..	40,365	43,545	167	1,013	456
May	34,048	1,033	342	79	10	88	..	35,600	26,766	146	391	224
June	39,900	1,534	226	58	20	64	..	41,802	38,340	88	662	126
Total, 6 mos., 1936 .....*tons*	210,242	7,596	2,664	631	159	437	..	221,729	.....	576	4,221	1,254
Total, 6 mos., 1935 .....*tons*	221,229	5,009	3,214	414	118	150	..	.....	230,134	404	3,045	119

Compiled from The Rubber Manufacturers Association, Inc., statistics.

United States Latex Imports

Year	Pounds	Value
1931	10,414,712	$884,355
1932	11,388,156	601,999
1933	24,829,861	1,833,671
1934	29,276,134	3,633,253
1935	30,358,748	3,782,222
1936		
Jan.	3,733,665	474,682
Feb.	3,268,542	406,985
Mar.	3,196,083	417,704
Apr.	3,610,511	522,049
May	3,296,351	490,769

Data from Leather and Rubber Division, United States Department of Commerce, Washington, D. C.

Rims Approved by The Tire & Rim Association, Inc.

Rim Size	6 Mos., 1936 No.	%	6 Mos., 1935 No.	%
Drop Center Rims, 16″ Diameter and under				
16x4.00D	4,479	0.0	1,383,459	13.7
16x4.25D	132,928	1.2	909,168	9.0
16x4.50D	22,767	0.2	251,670	2.5
16x5.00E	.....	...	13,617	0.1
15x5.50E	461	0.0	.....	...
16x5.50E	.....	...	9,015	0.1
15x3.00D	24,849	0.2	.....	...
15x5.00F	502	0.0	.....	...
15x5.50F	83,348	0.8	21,107	0.2
16x3.00D	385	0.0	.....	...
16x4.00E	4,063,854	36.7	1,602,440	15.8
16x4.25E	265,192	2.4	.....	...
16x4.50E	1,565,955	14.1	1,484,085	14.7
16x5.00F	468,860	4.2	37,569	0.4
16x5.50F	39,581	0.4	2,651	0.0
16x6.00F	6,138	0.1	.....	...
Drop Center Rims, 17″ Diameter and over				
17x3.00D	75,838	0.7	888,907	8.8
17x3.25E	419,307	3.8	396,686	3.9
17x3.62F	1,700,488	15.4	942,814	9.3
17x4.00F	14,197	0.1	31,216	0.3
17x4.19F	3,338	0.0	16,594	0.2
17x5.00F	2,895	0.0	.....	...
18x2.15B	16,180	0.1	12,198	0.1
18x3.00D	22	0.0	14,253	0.1
18x3.25E	4,511	0.0	12,841	0.1
18x4.00F	515	0.0	21	0.0
18x4.19F	14,124	0.1	7,526	0.1
19x2.15B	5,727	0.0	9,532	0.1
19x3.00D	6,437	0.1	11,754	0.1
19x3.25E	8,713	0.1	6,503	0.1
20x3.25E	10,518	0.1	5,998	0.1
21x3.25E	2,704	0.0	2,869	0.0
Flat Base Passenger Car Rims				
17x4	970	0.0	1,276	0.0
17x4½	.....	...	422	0.0
17x5	255	0.0	5,228	0.1
17x6	2,122	0.0	2,391	0.0
18x3.25E	499	0.0	502	0.0
18x4	590	0.0	708	0.0
18x4½	10	0.0	309	0.0
18x5	.....	...	1,416	0.0
19x2.75D	1,464	0.0	3,437	0.0
19x3.00D	663	0.0	1,453	0.0
19x4	2,109	0.0	2,507	0.0
19x4½	776	0.0	893	0.0
19x5	288	0.0	291	0.0
20x2.75D	2,142	0.0	1,918	0.0
20x3½	.....	...	2,098	0.0
20x4	1,337	0.0	634	0.0
20x4½	680	0.0	1,887	0.0
20x5	489	0.0	6,517	0.1
20x6	.....	...	107	0.0
21x2.75D	2,493	0.0	540	0.0
21x3½	2,785	0.0	5,382	0.1
21x4	933	0.0	973	0.0
21x4½	.....	...	3,251	0.0
High Pressure Rims				
All sizes	777	0.0	1,031	0.0
15″ Truck Rims				
15x7	2,329	0.0	.....	...
15x8	755	0.0	.....	...
18″ Truck Rims				
18x5	524	0.0	.....	...
18x6	2,161	0.0	220	0.0
18x7	20,749	0.2	15,922	0.1
18x8	1,642	0.0	1,470	0.0
18x9/10	2,437	0.0	.....	...
20″ Truck Rims				
20x5	711,463	6.4	994,351	8.8
20x6	911,424	8.2	700,764	6.9
20x7	186,834	1.7	116,548	1.1
20x8	88,062	0.8	52,470	0.5
20x9/10	8,276	0.1	6,274	0.1
20x10.50	688	0.0	.....	...
20x11	880	0.0	720	0.0
22″ Truck Rims				
22x7	177	0.0	722	...
22x8	7,804	0.1	6,614	0.1
22x9/10	4,580	0.0	4,967	0.0
24″ Truck Rims				
24x6	1,146	0.0	1,706	0.0
24x7	6,405	0.1	5,941	0.1
24x8	12,125	0.1	10,411	0.1
24x9/10	6,653	0.1	3,053	0.0
24x11	1,692	0.0	1,461	0.0
Drop Center Tractor Rims				
24x6.00S	2,863	0.0	2,262	0.0
24x8.00T	30,252	0.3	21,981	0.2
28x6.00S	1,245	0.0	157	0.0
28x8.00T	19,054	0.2	6,021	0.1
32x6.00S	1,052	0.0	.....	...
32x8.00T	1,723	0.0	358	0.0
36x6.00S	39,126	0.4	23,096	0.2
36x8.00T	6,075	0.1	2,839	0.0
40x6.00S	3,166	0.0	401	0.0
44x8.00T	30	0.0	.....	...
Cast Wheels				
10x5.00F	885	0.0	2,384	0.0
10x6.00F	442	0.0	.....	...
24x11.25Y	.....	...	78	0.0
24x15Y	302	0.0	.....	...
Clincher Rims				
All sizes	1,081	0.0	1,423	0.0
Clincher, Motorcycle				
24x3	.....	...	249	0.0
Airplane Rims				
All sizes	631	0.0	2,065	0.0
Totals	11,072,928	...	10,106.592	...

Tire Production Statistics

	Pneumatic Casings—All Types: Inventory	Production	Total Shipments
1933	8,888,070	45,304,230	44,093,714
1934	9,454,985	47,232,748	46,686,545
1935	8,195,863	49,361,781	50,183,129
1936			
Jan.	8,918,177	4,578,710	3,874,764
Feb.	9,264,595	3,577,221	3,211,040
Mar.	9,087,020	3,637,969	3,855,970
Apr.	9,034,017	4,854,133	4,902,721
May	8,176,296	4,970,993	5,831,964
	Inner Tubes—All Types		
1933	7,814,926	42,555,861	41,390,591
1934	9,179,893	46,227,807	45,045,495
1935	8,231,351	47,879,034	48,066,904
1936			
Jan.	8,622,522	4,591,791	4,167,711
Feb.	8,699,228	3,556,098	3,445,767
Mar.	8,691,651	3,787,226	3,795,505
Apr.	8,788,043	4,824,199	4,746,265
May	8,719,467	4,818,960	4,918,715
	Solid and Cushion Tires		
1933	26,271	130,987	126,990
1934	34,710	197,497	187,152
1935	46,406	283,606	275,741
1936			
Jan.	40,193	25,443	22,670
Feb.	.....	14,730	17,172
Mar.	.....	16,004	21,350
Apr.	.....	32,807	32,611
May	.....	29,674	30,378

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1933...	148,989,293	512,489,423	15,880,746,000
1934...	196,069,495	697,558,218	17,063,298,000
1935...	202,318,119	756,773,779	18,167,352,000
1936			
Jan....	15,987,906	61,457,999	1,367,226,000
Feb....	12,059,051	45,839,772	1,150,842,000
Mar...	13,416,664	47,872,526	1,506,582,000
Apr....	16,570,836	64,211,819	1,630,650,000
May...	17,098,812	66,119,211	1,764,294,000

Rubber Manufacturers Association, Inc., figures representing approximately 97% of the industry for 1934 and 1935, 81% for 1936, and 80% for previous years, with the exception of gasoline consumption.

COMPOUNDING INGREDIENTS

CARBON BLACK. The market has been going along on a very stable basis with good rate of consumption in the rubber trade. Production is now very well up to the point where stocks are in good balance. There is some discussion in Texas of imposing additional taxes on gas, which may affect costs of carbon black in due time. However, as yet, there are no definite indications on which to base conclusions. Prices are firm and schedules for July and August make for good steady flow of business.

Kosmobile 66 and Dixiedensed 66 are two new brands of dustless carbon black just announced for rubber compounding.[1]

LITHARGE. Early in July demand became spotty, later subsiding to seasonal routine. Prices have held unchanged for months.

LITHOPONE. Contracts for the third quarter are unchanged. Demand has fallen off seasonably.

RUBBER CHEMICALS. The demand for rubber chemicals was unexpectedly well maintained during July. In fact demand attained the 1936 peak. August may show a modest seasonal drop, but good business is anticipated.

RUBBER COLORS. Demand is fairly active. Prices are at low competitive levels.

[1] See p. 53.

RUBBER SOLVENTS. Prices are firm and unchanged. Demand holds steady and active.

TITANIUM PIGMENTS. Demand has moderated considerably and is more or less spotty.

ZINC OXIDE. Practically all the zinc oxide consuming industries are maintaining a good rate of consumption, especially the rubber industry which thus far this year has taken more than it took in 1935. Its consumption is proceeding steadily and later into summer than ordinarily. The price remains firm at present levels. Commitments are being made at these levels through the third quarter only.

New York Quotations

July 27, 1936

Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, powdered	lb.	$0.02½/$0.03½
Rottenstone, domestic	lb.	.03 / .03½
Silica, 15	ton	38.00
Accelerators, Inorganic		
Lime, hydrated	ton	20.00
Litharge (commercial)	lb.	.07
Magnesia, calcined, heavy	lb.	.04
carbonate	lb.	.06½/ .07
Accelerators, Organic		
A-1	lb.	.24 / .28
A-5-10	lb.	.33 / .36
A-10	lb.	
A-11	lb.	.60 / .75
A-16	lb.	.55 / .65
A-19	lb.	.56 / .75
A-32	lb.	.70 / .80
A-77	lb.	.46 / .55
Accelerator 49	lb.	.42
808	lb.	
833	lb.	
Acrin	lb.	
Aldehyde ammonia	lb.	
Altax	lb.	
Beutene	lb.	
Butyl Zimate	lb.	
C-P-B	lb.	
Captax	lb.	
Crylene	lb.	
Paste	lb.	
D-B-A	lb.	
Di-Esterex	lb.	
Di-Esterex-N	lb.	
DOTG	lb.	.47
D.O.T.T.U.	lb.	
DPG	lb.	.37
El-Sixty	lb.	.55 / .65
Ethylideneaniline	lb.	
Formaldehyde P.A.C.	lb.	
Formaldehydeaniline	lb.	
Formaldehyde-para-toluidine	lb.	
Guantal	lb.	.42 / .51
Hepteen	lb.	
Base	lb.	
Hexamethylenetetramine	lb.	
Lead oleate, No. 999	lb.	.11
Witco	lb.	.11
Methylenedianilide	lb.	
Monex	lb.	
Novex	lb.	
O. N. V.	lb.	
Ovac	lb.	
Pipsolene	lb.	1.60 / 1.85
R-2	lb.	1.50 / 1.80
Base	lb.	3.30 / 3.75
R & H 50-D	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tetrone A	lb.	
Thiocarbanilide	lb.	
Thionex	lb.	
Trimene	lb.	
Base	lb.	
Triphenyl guanidine (TPG)	lb.	
Tuads	lb.	
Ureka	lb.	.62 / 1.00
Blend B	lb.	.62 / .75
C	lb.	.58 / .69
Vulcanex	lb.	
Vulcanol	lb.	
Vulcone	lb.	
Z-B-X	lb.	
Z-88-P	lb.	.$0.48 /$0.60
Zenite	lb.	
A	lb.	
B	lb.	
Zimate	lb.	
ZML	lb.	
Activator		
Barak	lb.	
Age Resisters		
Age-Rite Gel	lb.	
HP	lb.	
Powder	lb.	
Resin	lb.	
D	lb.	
Syrup	lb.	
White	lb.	
Akroflex C	lb.	
Albasan	lb.	
Antox	lb.	
B-L-E	lb.	
B-X-A	lb.	
Copper Inhibitor X-872	lb.	
Flectol B	lb.	.54 / .65
H	lb.	.54 / .65
White	lb.	.95 / 1.15
M-U-F	lb.	
Neozone (standard)	lb.	
A	lb.	
C	lb.	
D	lb.	
E	lb.	
Oxynone	lb.	.66 / .75
Parazone	lb.	
Perflectol	lb.	.67 / .75
Permalux	lb.	
Solux	lb.	
Thermoflex	lb.	
A	lb.	
V-G-B	lb.	
Alkalies		
Caustic soda, flake, Columbia (400 lb. drums)	100 lbs.	3.00 / 4.00
liquid, 50%	100 lbs.	2.25
solid (700 lb. drums)	100 lbs.	2.60 / 3.60
Antiscorch Materials		
Antiscorch T	lb.	
Cumar RH	lb.	.09
Retarder B	lb.	
W	lb.	
T-J-B	lb.	
U.T.B.	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	
Brake Lining Saturant		
B. R. T. No. 3	lb.	.016 / .018
Colors		
BLACK		
Lampblack (commercial)	lb.	.15
BLUE		
Brilliant	lb.	.37½
Prussian	lb.	.80 / 3.50
Toners	lb.	
BROWN		
Mapico	lb.	$0.13
GREEN		
Brilliant	lb.	
Chrome, light	lb.	
medium	lb.	
oxide	lb.	.18½
Dark	lb.	
Guignet's	lb.	.70
Light	lb.	
Toners	lb.	.85 /$3.50
ORANGE		
Lake	lb.	
Toners	lb.	.40 / 1.60
ORCHID		
Toners	lb.	1.50 / 2.00
PINK		
Toners	lb.	1.50 / 4.00
PURPLE		
Permanent	lb.	
Toners	lb.	.60 / 2.00
RED		
Antimony		
Crimson, 15/17%	lb.	.50
R. M. P. No. 3	lb.	.46
Sulphur free	lb.	.48 / .52
Golden 15/17%	lb.	.28
7-A	lb.	.33
Z-2	lb.	.22
Aristi	lb.	1.75
Cadmium, light (400 lb. bbls.)	lb.	.70
Chinese	lb.	
Crimson	lb.	
Mapico	lb.	
Medium	lb.	
Rub-Er-Red	lb.	.09¼
Scarlet	lb.	
Toners	lb.	.80 / 2.00
WHITE		
Lithopone (bags)	lb.	.04½/ .04¾
Albalith Black Label-11	lb.	.04½/ .04¾
Astrolith (5-ton lots)	lb.	.04½
Azolith	lb.	.04½/ .04¾
Cryptone-19	lb.	.06 / .06¼
CB-21	lb.	.06 / .06¼
ZS No. 20	lb.	.10½/ .10¾
No. 86	lb.	.10½/ .10¾
Sunolith (5-ton lots)	lb.	.04½
Ray-Bar	lb.	
Ray-Cal	lb.	
Rayox	lb.	
Titanolith (5-ton lots)	lb.	.06
Titanox-A (50-lb. bags)	lb.	.17 / .18½
B (50-lb. bags)	lb.	.06 / .06¼
C (50-lb. bags)	lb.	.06 / .06¼
Ti-Tone	lb.	
Zinc Oxide		
Anaconda, Green Seal		
No. 333	lb.	.06 / .06¼
Lead Free No. 352	lb.	.05 / .05¼
No. 570	lb.	.05 / .05¼
No. 577	lb.	.05 / .05¼
Red Seal No. 222	lb.	.05½/ .05¾
U.S.P. No. 777 (bbls.)	lb.	.08
White Seal No. 555	lb.	.06½/ .06¾

Azo ZZZ-11	lb.	$0.05	/$0.05¼
44	lb.	.05	/ .05¼
55	lb.	.05	/ .05¼
66	lb.	.05	/ .05¼
French Process, Florence White Seal-7 (bbls.)	lb.	.06½/	.06¾
Green Seal-8	lb.	.06	/ .06¼
Red Seal-9	lb.	.05½/	.05¾
Kadox, Black Label-15	lb.	.05	/ .05¼
Blue Label-16	lb.	.05	/ .05¼
Red Label-17	lb.	.05	/ .05¼
Horse Head Special 3	lb.	.05	/ .05¼
XX Red-4	lb.	.05	/ .05¼
23	lb.	.05	/ .05¼
72	lb.	.05	/ .05¼
78	lb.	.05	/ .05¼
80	lb.	.05	/ .05¼
103	lb.	.05	/ .05¼
110	lb.	.05	/ .05¼
St. Joe (lead free)			
Black Label No. 20	lb.	.05	/ .05¼
Green Label No. 42	lb.	.05	/ .05¼
Red Label No. 30	lb.	.05	/ .05¼
U.S.P. X	lb.	.08	
White Jack	lb.	.10½/	.11½
YELLOW			
Cadmolith (Cadmium yellow), 400-lb. bbls.	lb.	.45	
Lemon	lb.		
Mapico	lb.	.09½	
Toners	lb.	2.50	

Dispersing Agents

Bardol	lb.	.021 /	.023
Darvan	lb.		

Factice

Amberex	lb.	.26	
Brown	lb.		
Duphax A	lb.		
B	lb.		
Fac-Cel B	lb.		
C	lb.		
White	lb.		

Fillers, Inert

Asbestine, c.l., f.o.b. mills	ton	15.00	
Barytes	ton	30.00	
f.o.b. St. Louis (50 lb. paper bags)	ton	22.85	
off color, domestic	ton	20.00	/25.00
white, imported	ton	29.00	/32.00
Blanc fixe, dry, precip	lb.	.03½/	.05
Calcene	ton	37.50	/45.00
Infusorial earth	lb.	.02 /	.03
Kalite No. 1	ton		
No. 3	ton		
Whiting			
Columbia Filler	ton	9.00	/14.00
Domestic	100 lbs.		
Guilders	100 lbs.		
Hakuenka	lb.		
Paris white, English cliff-stone	100 lbs.		
Southwark Brand, Commercial	100 lbs.		
All other grades	100 lbs.		
Suprex, white extra light	ton	45.40	/60.00
heavy	ton	45.40	/60.00
Witco, c.l.	ton	7.00	

Fillers for Pliability

P-33	lb.		
Thermax	lb.		
Velvetex	lb.	.03 /	.04½

Finishes

IVCO lacquer, clear	gal.		
colors	gal.		
Rubber lacquer, clear	gal.		
colored	gal.		
Starch, corn, pwd	100 lbs.		
potato	lb.		
Talc	ton	25.00	/45.00
Dusting	ton		
Pyrax	ton		

Flock

Cotton flock, dark	lb.	.11½/	.13½
dyed	lb.	.50 /	.85
white	lb.	.14½/	.19½
Rayon flock, colored	lb.	1.25 /	1.50
white	lb.	1.00	

Latex Compounding Ingredients

Accelerator 85	lb.		
89	lb.		
122	lb.		
552	lb.		
Alphasol-OS	lb.	.60	
Antox, Dispersed	lb.		
Aquarex A	lb.		
D	lb.		
F	lb.		
Aresklene 375	lb.	.35 /	.50
Black No. 25, Dispersed	lb.	.22 /	.40
Catalpo	ton		
Color Pastes, Dispersed	lb.		
Dispersaid	lb.	1.50	
Dispersex No. 15	lb.	.80 /	.95
No. 20	lb.	.60 /	.75
Emo, brown	lb.		
white	lb.		
Factice Compound, Dispersed	lb.		
Heliozone, Dispersed	lb.		
Igepon A	lb.		
Micronex, Colloidal (75 lbs.)	lb.	.11	
320 lbs.	lb.	.08	
Nekal BX (dry)	lb.		
Palmol	lb.	$0.085	
Paradors	lb.		
Stablex A	lb.	1.75	
B	lb.	.90	
C	lb.	.30	
Sulphur, Dispersed	lb.	.10	/$0.15
T.1. (400 lb. drums)	lb.	.40	
Tepidone	lb.		
Vulcan Colors	lb.		
Zinc oxide, Colloidal	lb.		
Dispersed	lb.	.09 /	.15

Mineral Rubber

B. R. C. No. 20	lb.	.0125/	.014
Black Diamond	ton	25.00	
Genasco Hydrocarbon, granulated, (fact'y)	ton		
solid	ton		
Gilsonite Hydrocarbon (factory)	ton		
Hydrocarbon, hard	ton		
soft	ton		
Parmr Grade 1	ton	25.00	
Grade 2	ton	31.00	
Pioneer	ton		
265°	ton		

Mold Lubricants

Mold Paste	lb.	.12 /	.30
Sericite	ton	65.00	/75.00
Soapbark	lb.		
Soapstone	ton	25.00	/35.00

Oil Resistant

AXF	lb.		

Reclaiming Oils

B. R. V.	lb.	.039 /	.041
S. R. O.	lb.	.015 /	.019

Reenforcers

Carbon Black			
Aerfloted Arrow Specification Black	lb.	.0535/	.0825
Arrow Compact Granulized Carbon Black	lb.		
"Certified" Heavy Compressed, Cabot	lb.		
Spheron	lb.		
Disperso (delivered)	lb.	.0445/	.0535
Dixie, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock delivered	lb.	.07 /	.08¼
Dixiedensed, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock delivered	lb.	.07 /	.08¼
Dixiedensed 66, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.		
c.l., delivered New York	lb.		
local stock delivered	lb.		
Excello, c.l., f.o.b. Gulf ports	lb.	.0445/	.0645
delivered New York	lb.	.0535/	.0735
l.c.l., delivered New York	lb.	.07 /	.08¼
Fumonex, c.l., f.o.b. works	lb.	.03	
ex-warehouse	lb.	.04½	
Gastex	lb.	.03 /	.07
Kosmobile, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock delivered	lb.	.07 /	.08¼
Kosmobile 66, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.		
c.l., delivered New York	lb.		
local stock, delivered	lb.		
Kosmos, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock delivered	lb.	.07 /	.08¼
Micronex Beads, c.l., f.o.b. Gulf ports	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock, l.c.l., delivered	lb.	.07 /	.08¼
Mark II, c.l., f.o.b. Gulf ports	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock, l.c.l., delivered	lb.	.07 /	.08¼
Standard, c.l., f.o.b. Gulf ports	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock, l.c.l., delivered	lb.	.07 /	.08¼
W-5, c.l., f.o.b., Gulf ports	lb.	.0445	
c.l., delivered New York	lb.	.0535	
local stock, l.c.l., delivered	lb.	.07 /	.08¼
W-6, c.l., f.o.b., Gulf ports	lb.	$0.0445	
c.l., delivered New York	lb.	.0535	
local stock, l.c.l., delivered	lb.	.07	/$0.08¼
Pelletex	lb.	.03 /	.07
Supreme, c.l., f.o.b. Gulf ports	lb.	.0445/	.0645
delivered New York	lb.	.0535/	.0735
l.c.l., delivered New York	lb.	.07 /	.08¼
"WYEX BLACK"	lb.		
Carbonex	lb.	.03 /	.0375
Carbonex "S"	lb.	.0315/	.04
Clays			
Aerfloted Paragon	ton	8.50	
Suprex No. 1 Selected	ton	10.00	
No. 2 Standard	ton	8.50	
China	ton		
Dixie	ton		
Junior	ton		
McNamee	ton		
Par	ton		
Witco	ton	8.50	
Cumar EX	lb.	.04	

Reodorants

Amora A	lb.		
B	lb.		
C	lb.		
D	lb.		
Paradors	lb.		
Rodo No. 0	lb.		
No. 10	lb.		

Rubber Substitutes

Black	lb.	.07 /	.11
Brown	lb.	.08 /	.14
White	lb.	.08½/	.13

Softeners

Burgundy pitch	lb.	.05	
Cycline oil	gal.	.15 /	.28
Palm oil (Witco)	lb.	.05½	
Petrolatum, amber (f.o.b. refinery, Warren, Pa.)	lb.	.02½/	.03¼
light amber	lb.	.02¾/	.03½
Pine tar	gal.		
Plastogen	lb.		
Reogen	lb.		
Rosin oil, compounded	gal.	.40	
RPA No. 1	lb.		
Rubtack	lb.	.10	
Tackol	lb.	.085 /	.18
Tonox	lb.		
Powder	lb.		
Witco No. 20	gal.	.15	

Softeners for Hard Rubber Compounding

RSL Resin	lb.	.25 /	.35
Resin C Pitch 55° C. M.P.	lb.	.0125/	.0145
Resin C Pitch 70° C. M.P.	lb.	.0125/	.0145
Resin C Pitch 85° C. M.P.	lb.	.0125/	.0145

Solvents

Beta-Trichlorethane	gal.		
Bondogen	lb.		
Carbon bisulphide	lb.		
tetrachloride	lb.		

Stabilizers for Cure

Laurex, ton lots	lb.		
Stearex B	lb.	.075	
Beads	lb.	.074	
Stearic acid, single pressed	lb.	.075	
Stearite	100 lbs.	7.80	
Zinc stearate	lb.	.22	

Synthetic Rubber

"DuPrene"[1] Latex Type 50	lb.		
53	lb.		
54	lb.		
Type E	lb.		
"Thiokol" A (f.o.b. Yardville)	lb.	.35	
Coating Materials	gal.	3.00	/ 5.00
D	lb.	.65	
Molding Powder	lb.	.55 /	.70

Tackifier

B. R. H. No. 2	lb.	.014 /	.02

Varnish

Shoe	gal.	.145	

Vulcanizing Ingredients

Sulphur			
Chloride, drums	lb.	.03½/	.04
Rubber	100 lbs.	1.95	
Telloy	lb.		
Vandex	lb.		

(See also Colors—Antimony)

Waxes

Carnauba, No. 3 chalky	lb.	.35	
2 N.C.	lb.	.40	
3 N.C.	lb.	.35	
1 Yellow	lb.	.44½	
2	lb.	.43½	
Montan, crude	lb.	.11	

[1] Trade mark registered.

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge.*

SITUATIONS WANTED

TIME STUDY AND PERSONNEL: 11 YEARS' EXPERIENCE IN rubber industry; 2 years' plant superintendent. Employed at present. Desire to make change. References. Address Box No. 688, care of INDIA RUBBER WORLD.

SUPERINTENDENT OR FOREMAN. PRACTICAL MAN WITH 25 years' experience in rubberizing all kinds of fabrics, spread or calender, single or double texture, suede cloth, quarter lining, leatherette, auto topping, luggage and bag cloth, gas mask, cloth for shoes and slippers trade. Up-to-date compounder. Best of references. Address Box No. 689, care of INDIA RUBBER WORLD.

TECHNICAL MAN, 11 YEARS' EXPERIENCE ON ALL KINDS of proofed goods, including 5 years on latex, 2½ years foreign experience, capable of carrying from development to manufacturing stage or taking charge of entire production. Will consider sales development with reliable firm. Address Box No. 692, care of INDIA RUBBER WORLD.

CALENDER AND MILL ROOM FOREMAN OR SUPERVISOR with years of thorough practical experience, efficient manager, at present holding responsible position, desires to make a change. Best of references. Address Box No. 696, care of INDIA RUBBER WORLD.

EXECUTIVE POSITION, YEARS OF EXPERIENCE rubberizing calendered or spread, specialties of all kinds, hospital sheetings, and raincoat material. Complete knowledge of compounds, organizing plants for efficient and economical production. Address Box No. 697, care of INDIA RUBBER WORLD.

GRADUATE CHEMIST WITH BROAD PRACTICAL AND SCIENtific experience in rubber plant and compounding procedure will soon be available for a responsible compounding or sales development connection. Address Box No. 698, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

SALESMAN FOR MECHANICAL RUBBER GOODS NEW YORK Metropolitan area. Must have practical factory experience in rubber compounding. Reference required. Address Box No. 686, care of INDIA RUBBER WORLD.

WANTED: CHEMIST OF GOOD TRAINING FOR RESPONsible position. Thoroughly experienced in the manufacture of all lines of proofed and coated fabrics. Capable of handling development work in this field. Give details of training and experience and salary expected. Address Box No. 687, care of INDIA RUBBER WORLD.

SALESMAN CALLING ON RUBBER MANUFACTURers increase earnings sell steam specialty. Sideline. Pays good commission. Repeat orders. Address Box No. 691, care of INDIA RUBBER WORLD.

WANTED: RUBBER CHEMIST OR CHEMICAL ENGINEER EXperienced in molded goods, heels, soles, etc. Must understand developing compounds and follow them through plant. Excellent opportunity for right man to advance to responsible position. Give details of training, experience, and salary expected at start. Replies will be held in strict confidence. Address Box No. 693, care of INDIA RUBBER WORLD.

WANTED: FACTORY SUPERINTENDENT FOR RUBBER FACtory; complete knowledge and experience in gutta percha and rubber combining work; location near New York; wonderful opportunity for right man; state past record and qualifications. Address Box No. 695, care of INDIA RUBBER WORLD.

(*Advertisements continued on page 79*)

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	March, 1936		Twelve Months Ended March, 1936	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude rubber, etc.	4,052,065	$569,762	56,892,370	$6,723,350
Gutta percha	4,512	4,088	23,021	13,211
Rubber, recovered	1,136,100	51,766	8,392,500	392,820
Rubber, powdered, and gutta percha scrap	368,900	5,876	3,059,100	39,883
Balata	165	58	13,227	3,417
Rubber substitute	65,300	11,564	468,500	125,401
Totals	5,627,042	$643,114	68,848,718	$7,298,082
PARTLY MANUFACTURED				
Hard rubber sheets and rods	4,980	$4,655	28,658	$23,911
Hard rubber tubes	.....	344	.....	4,722
Rubber thread not covered	4,280	2,700	55,713	35,870
Totals	9,260	$7,699	84,371	$64,503
MANUFACTURED				
Hard rubber comb blanks	.....	$603	.....	$16,934
Belting	.....	7,929	.....	80,069
Hose	.....	8,454	.....	97,051
Packing	.....	6,771	.....	63,258
Boots and shoes, *pairs*	48,520	12,558	530,062	345,317
Clothing, including waterproofed	.....	4,152	.....	21,687
Raincoats, *number*	5,067	14,501	14,312	45,867
Gloves, *dozen pairs*	328	829	2,810	6,977
Hot water bottles	.....	305	.....	13,220
Liquid rubber compound	.....	.....	.....	11,908
Tires, bicycle, *number*	6,108	2,515	50,739	22,273
Pneumatic, *number*	1,315	14,852	16,567	152,010
Inner tubes, *number*	400	599	3,436	7,622
Solid for automobiles and motor trucks, *number*	12	767	377	11,020
Other solid tires	.....	479	.....	7,118
Mats and matting	.....	13,425	.....	99,669
Cement	.....	8,736	.....	83,793
Golf balls, *dozen*	5,745	15,075	39,873	105,511
Heels, *pairs*	3,355	257	89,685	5,733
Other rubber manufactures	.....	91,305	.....	841,197
Totals	.....	$204,132	.....	$2,038,234
Totals, rubber imports	.....	$854,945	.....	$9,400,819

Exports of Domestic and Foreign Rubber Goods

	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Waste rubber	$6,570	.....	$70,975	.....
MANUFACTURED				
Belting	$58,138	.....	$552,921	.....
Canvas shoes with rubber soles	285,168	.....	1,205,264	.....
Boots and shoes	[illegible]	.....	2,480,596	.....
Clothing, including waterproofed	25,455	.....	213,145	.....
Heels	20,188	.....	190,850	.....
Hose	25,373	.....	170,841	.....
Soles	20,764	.....	209,746	.....
Tires, bicycle	12	.....	514	.....
Pneumatic	856,876	.....	6,666,294	.....
Inner tubes	99,016	.....	551,903	.....
Solid	.....	.....	19	.....
Other rubber manufactures	$2,508	$1,709	587,245	$16,936
Totals	$1,718,879	$1,709	$12,830,338	$16,936
Totals, rubber exports	$1,725,449	$1,709	$12,901,311	$16,936

Rubber Goods Production Statistics

	1936		1935	
TIRES AND TUBES*	Mar.	Apr.	Mar.	Apr.
Pneumatic casings				
Production, *thousands*	2,947	3,932	4,215	4,376
Shipments, total, *thousands*	3,123	3,971	4,078	4,989
Domestic, *thousands*	3,065	3,917	4,000	4,908
Stocks, end of month, *thousands*	7,360	7,318	11,325	10,673
Solid and cushion tires				
Production, *thousands*	16	33	18	20
Shipments, total, *thousands*	21	32	20	22
Domestic, *thousands*	21	32	20	21
Stocks, end of month, *thousands*	32	32	31	31
Inner tubes				
Production, *thousands*	3,068	3,908	3,999	4,132
Shipments, total, *thousands*	3,074	3,844	4,043	4,320
Domestic, *thousands*	3,027	3,792	3,980	4,252
Stocks, end of month, *thousands*	7,040	7,118	10,094	9,864
Raw material consumed				
Fabrics, *thous. of lbs.*	13,417	16,571	7,849	8,011
MISCELLANEOUS PRODUCTS				
Rubber bands, shipments, *thous. of lbs.*	236	266	276	285
Rubber-proofed fabrics, production, total, *thous. of yds.*	3,467	4,134	4,071	4,068
Auto fabrics, *thous. of yds.*	199	265	256	305
Raincoat fabrics, *thous. of yds.*	1,289	1,442	1,307	1,398
Rubber flooring, shipments, *thous. of sq. ft.*	422	485	366	456
Rubber and canvas footwear				
Production, total, *thous. of prs.*	5,905	5,876	5,863	5,415
Tennis, *thous. of prs.*	2,937	2,888	3,673	3,188
Waterproof, *thous. of prs.*	2,969	2,988	2,190	2,226
Shipments, total, *thous. of prs.*	5,041	4,970	5,087	4,210
Tennis, *thous. of prs.*	3,019	3,519	4,023	3,276
Waterproof, *thous. of prs.*	2,022	1,451	1,064	934
Shipments, domestic, total, *thous. of prs.*	5,011	4,928	5,041	4,170
Tennis, *thous. of prs.*	2,997	3,480	3,997	3,243
Waterproof, *thous. of prs.*	2,014	1,447	1,044	927
Stocks, total, end of month, *thous. of prs.*	15,804	16,699	15,854	17,056
Tennis, *thous. of prs.*	7,305	6,565	6,331	6,241
Waterproof, *thous. of prs.*	8,597	10,134	9,523	10,815

*Data for January to July, 1935, are estimated to represent approximately 97% of the industry; for August, September, October, November, and December, 1935, the coverage is estimated to be 81%.

Source: *Survey of Current Business*, Bureau of Foreign & Domestic Commerce, Washington, D. C.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
2159	Manufacturer of mottled rubber molding, angle shaped with unequaled legs.
2160	Manufacturer of latex prophylactic and surgical seamless goods.
2161	Manufacturer of rubber automobile hood corner guards.
2162	Manufacturer of rubber weather stripping.
2163	Manufacturer of corrugated and perforated rubber mats.
2164	Manufacturer of special elastic bands, in the New York metropolitan area.
2165	Manufacturer of hard rubber molded wheels 1½ to 3 inches in diameter.
2166	Information wanted on making rubber molds for religious figures, etc.
2167	Manufacturer of automatic machinery for filling collapsible tubes with rubber cement.
2168	Manufacturer of machine for trimming fins from rubber articles.
2169	Manufacturer of thin sheets of rubberized material with adhesive on only one side.
2170	Supplier of used edge trimming machine.
2171	Supplier of balata.
2172	Supplier of chicle.
2173	Supplier of balsam of fir.

Shipments of Crude Rubber from Producing Countries

Year	Malaya including Brunei and Labuan	N.E.I.	Ceylon	India	Burma	North Borneo	Sarawak	Siam	French Indo-China	Total	Philippines and Oceania	Africa	South America	Mexican Guayule	Grand Total
1933	445,800	282,300	63,800	1,400	3,400	7,800	11,100	7,000	17,300	839,900	1,200	2,300	10,100	0	853,500
1934	467,400	379,400	79,100	6,500	6,300	11,100	17,700	17,700	19,600	1,004,800	1,400	3,500	9,100	400	1,019,200
1935															
Jan.	41,684	18,726	6,294	782	315	1,238	1,536	2,614	2,575	75,764	105	467	1,525	0	77,861
Feb.	32,819	28,019	5,551	383	487	760	1,880	2,288	2,018	74,205	156	254	696	0	75,311
Mar.	34,072	22,403	1,720	278	373	773	1,874	2,076	1,440	65,009	82	525	887	0	66,503
Apr.	37,414	26,156	3,749	207	332	846	1,875	1,661	1,816	74,056	134	185	1,036	0	75,411
May	27,747	36,289	4,473	575	509	848	1,977	2,752	1,800	76,970	134	315	761	50	78,230
June	31,225	29,337	3,525	815	286	603	1,983	2,869	2,516	73,159	142	393	905	103	74,702
July	37,828	20,989	4,106	555	211	1,164	1,752	1,729	1,957	70,291	125	407	423	52	71,298
Aug.	40,993	21,154	5,683	432	133	566	772	2,328	2,357	74,418	143	442	1,212	50	76,265
Sept.	40,995	20,447	4,053	606	104	421	1,758	1,949	2,248	72,581	94	441	1,146	17	74,279
Oct.	29,036	28,162	5,932	918	366	1,040	1,684	2,679	2,751	72,568	180	319	1,270	43	74,380
Nov.	32,750	17,401	4,288	1,524	749	455	1,141	2,303	2,406	63,017	123	524	966	63	64,693
Dec.	30,442	13,775	4,942	1,979	1,049	171	1,233	3,079	4,793	61,463	119	759	1,367	81	63,789
1936															
Jan.	26,637	20,778	4,178	419	874	938	2,317	1,665	2,449	60,255	105	494	1,796	70	62,720
Feb.	19,692	27,991	3,664	871	511	529	2,111	3,663	2,894	61,926	225	620	1,177	75	64,023
Mar.	34,597	19,393	4,336	750	574	542	1,848	2,966	2,553	67,359	104	535	1,175	40	69,213
Apr.	21,671	25,254	3,172	413	817	869	2,053	1,596	2,416	58,261	92	600*	1,044	103	60,100
May	34,108	22,109	2,560	659	485	517	2,354	2,077	2,272	67,141	100*	550*	1,018	100*	68,909

*Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

Classified Advertisements

Continued

BUSINESS OPPORTUNITIES

FOR SALE OR RENT: RUBBER PLANT NEAR PHILADELPHIA fully equipped for operating, machinery, presses, calenders, new boiler, artesian well, etc.; 9,000 square feet in building. An opportunity. Wynne James, Jr., Doylestown, Pa.

WANTED: FORMULAE FOR MAKING TYPEWRITER PLASTIC type cleaner. Address Box No. 690, care of INDIA RUBBER WORLD.

CHICAGO MANUFACTURER WITH IDEAL FACILITIES and low overhead equipped for quantity production of molded rubber parts, refining and milling of crude rubber, balata, etc., is seeking additional business. Send inquiries, sketches, samples to Box No. 694, care of INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES WANTED

WANTED: USED RUBBER MACHINERY FOR MANUFACTURing inner tubes, tires, and general rubber goods; also a number of washing mills, all sizes. Machines must be guaranteed in good condition. Address Box No. 699, care of INDIA RUBBER WORLD.

(*Advertisements continued on page* 81)

United States Statistics

Imports for Consumption of Crude and Manufactured Rubber

	March, 1936		Three Months Ended March, 1936	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	74,921,243	$9,845,776	220,944,903	$27,777,484
Liquid latex	3,196,083	417,704	10,198,290	1,299,371
Jelutong or pontianak	847,361	70,560	3,202,016	289,143
Balata	145,356	25,590	435,091	68,903
Gutta percha	455,170	79,088	842,018	152,598
Guayule	90,000	7,605	414,000	34,914
Siak, scrap, reclaimed, etc.	10,074,712	21,325	2,963,655	56,271
Totals	89,729,925	$10,467,648	238,999,973	$29,678,684
Chicle, crude ...*Free*	1,258,697	$292,903	2,751,257	$665,519
MANUFACTURED—*Dutiable*				
Rubber tires ...*number*	38,557	$280,726	42,823	$283,924
Rubber boots, shoes, and overshoes ...*pairs*	1,635	495	5,575	3,470
Rubber soled footwear with fabric uppers ...*pairs*	60,442	16,846	195,352	57,583
Golf balls ...*number*	107,010	16,989	116,370	18,625
Lawn tennis balls...*number*	73,768	6,081	212,079	17,763
Other rubber balls...*number*	764,147	21,588	1,170,122	36,574
Other rubber toys, except balls	57,224	7,427	225,654	27,749
Hard rubber combs...*number*	52,344	2,787	186,180	9,366
Other manufactures of hard rubber	.....	4,882	.....	7,118
Friction or insulating tape	16,000	877	50,140	2,498
Belts, hose, packing, and insulating material	.....	42,994	.....	60,429
Druggists' sundries of soft rubber	.....	11,638	.....	26,145
Inflatable swimming belts, floats, etc. ...*number*	131,244	6,870	226,554	10,975
Other manufactures	138,867	24,595	343,534	59,496
Totals	.....	$444,795	.....	$621,715

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	2,625,040	$390,551	5,665,512	$819,636
Balata	25,178	6,790	70,252	17,866
Gutta percha, rubber substitutes, and scrap	.....	.....	41,686	2,941
Rubber manufactures	.....	1,197	.....	3,903
Totals	.....	$398,538	.....	$844,346

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	1,323,247	$65,089	3,623,277	$169,125
Scrap	4,386,832	83,357	10,429,311	209,567
Cements ...*gal.*	19,030	14,600	47,379	36,215
Rubberized automobile cloth, *sq. yd.*	48,373	22,283	104,387	50,068
Other rubberized piece goods and hospital sheeting...*sq. yd.*	141,053	52,341	297,108	116,823
Footwear				
Boots ...*pairs*	8,093	18,499	29,229	66,886
Shoes ...*pairs*	28,927	11,081	51,704	25,359
Canvas shoes with rubber soles ...*pairs*	14,616	7,782	45,037	26,803
Soles ...*doz. prs.*	2,995	5,151	6,380	11,193
Heels ...*doz. prs.*	25,381	12,453	96,116	60,368
Soling and top lift sheets	8,418	1,568	89,903	15,545
Gloves and mittens...*doz. prs.*	6,077	13,561	13,129	30,328
Water bottles and fountain syringes ...*number*	15,695	8,388	38,496	17,393
Other druggists' sundries	.....	35,055	.....	105,703
Gum rubber clothing...*doz.*	6,300	18,567	30,188	39,815
Balloons ...*gross*	28,502	23,383	82,482	67,648
Toys and balls	.....	4,191	.....	13,273
Bathing caps ...*doz.*	8,968	17,123	19,247	34,734
Bands	19,817	7,058	57,221	20,045
Erasers	30,743	18,101	81,176	49,195
Hard rubber goods				
Electrical hard rubber goods	.....	17,847	.....	53,684
Other hard rubber goods	.....	22,959	.....	62,381
Tires				
Truck and bus casings, *number*	11,022	216,262	42,256	811,271
Other automobile casings, *number*	59,540	530,879	175,499	1,550,767
Tubes, auto ...*number*	46,609	77,494	149,276	243,450
Other casings and tubes, *number*	3,463	9,319	8,273	27,751
Solid tires for automobiles and motor trucks...*number*	420	9,475	1,260	34,264
Other solid tires	33,017	6,504	179,210	28,395
Tire sundries and repair materials	.....	35,848	.....	111,313
Rubber and friction tape	52,004	13,036	168,997	40,675
Belts and belting	212,208	108,971	598,385	301,687
Hose	433,005	131,646	1,171,230	354,718
Packing	100,021	44,740	368,556	145,833
Mats, matting, flooring, and tiling	129,364	14,352	376,205	43,046
Thread	104,223	54,233	348,883	168,900
Gutta-percha manufactures	24,074	7,239	141,129	40,625
Other rubber manufactures	.....	110,388	.....	320,838
Totals	.....	$1,850,823	.....	$5,505,684

Rubber Questionnaire

First Quarter, 1936*

	Long Tons			
	Inventory at End of Quarter	Production	Shipments	Consumption
RECLAIMED RUBBER				
Reclaimers solely (6)	4,229	15,485	14,500	.....
Manufacturers who also reclaim (15)	4,901	9,527	1,912	8,154
Other manufacturers (104)	4,581	.....	.....	11,121
Totals	13,711	25,012	16,412	19,275

	Long Tons		
	Inventory	Consumption	Due on Contract
SCRAP RUBBER			
Reclaimers solely (6)	30,397	17,195	11,207
Manufacturers who also reclaim (14)	22,785	11,799	5,343
Other manufacturers (14)	238	.....	.....
Totals	53,420	28,994	16,550

Tons of Rubber Consumed in Rubber Products and Total Sales Value of Shipments

PRODUCTS	Rubber Consumed Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries		
All types pneumatic casings (except bicycle, airplane)	60,853	$55,214,000
All types pneumatic tubes (except bicycle, airplane)	9,301	8,382,000
Bicycle tires, including juvenile pneumatics (single tubes, casings, and tubes)	510	775,000
Airplane tires and tubes	30	98,000
Solid and cushion tires for highway transportation	112	201,000
All other solid and cushion tires	102	264,000
Tire sundries and repair materials	1,438	2,066,000
Totals	72,346	$67,000,000
Other Rubber Products		
Mechanical rubber goods	9,708	$25,029,000
Boots and shoes	5,106	12,283,000
Insulated wire and cable compounds	1,306	†
Druggists' sundries, medical and surgical rubber goods	775	1,961,000
Stationers' rubber goods	511	531,000
Bathing apparel	285	297,000
Miscellaneous rubber sundries	690	1,223,000
Rubber clothing	126	480,000
Automobile fabrics	92	369,000
Other rubberized fabrics	891	1,979,000
Hard rubber goods	510	1,955,000
Heels and soles	2,288	3,475,000
Rubber flooring	201	341,000
Sponge rubber	681	862,000
Sporting goods, toys, and novelties	582	1,269,000
Totals	23,752	$52,054,000
Grand totals—all products	96,098	$119,054,000

Inventory of Rubber in the United States and Afloat

	Long Tons	
	Crude Rubber on Hand	Crude Rubber Afloat
Manufacturers	139,877	8,563
Importers and dealers	87,969	45,393
Totals	227,846	53,956

*Number of rubber manufacturers that reported data was 187; crude rubber importers and dealers, 44; reclaimers (solely), 6; total daily average number of employes on basis of third week of January was 125,304.

It is estimated that the reported grand total crude rubber consumption is 75%; grand total sales value, 80%; the grand total crude rubber inventory, 82.3%; afloat figures unavailable; the reclaimed rubber production 76.8%; reclaimed consumption, 73.6%; and reclaimed inventory, 47% of the total of the entire industry.

†Due to the difficulty of securing representative sales figures this item has been discontinued.

Compiled from statistics supplied by The Rubber Manufacturers Association, Inc.

Imports by Customs Districts

	May, 1936		May, 1935	
	*Crude Rubber		*Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	6,241,055	$936,312	6,604,220	$742,409
Buffalo	110	17	.....	.....
New York	58,258,266	8,557,332	51,102,343	5,529,276
Philadelphia	2,845,334	430,840	817,888	100,353
Maryland	892,836	121,851	2,332,630	241,352
Mobile	347,356	51,146	1,097,046	128,020
New Orleans	976,675	144,394	44,800	4,868
Los Angeles	12,883,975	1,629,199	5,498,009	661,137
San Francisco	627,861	82,395	1,082,890	124,309
Oregon	22,400	3,360	.....	.....
Ohio	93,901	10,778	200,442	20,145
Totals	83,189,769	$11,967,624	68,780,268	$7,551,869

*Crude rubber including latex dry rubber content.

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

LIQUIDATING—FOR PROMPT REMOVAL

Machinery purchased from the plant of the MURRAY RUBBER CO., Trenton, N. J. Still set up. Consisting of 1 Farrel 3-roll 66" Calender with herring bone red. gear drive; 1 Cell Fabric Drier 7-deck with Unwinder and Rewinder; 8 Textile Machinery Co. Braiders; 1 400 H.P. Reduction Gear Drive; 1 250 H.P. Chain Drive; 1 #4 Royle Tuber, motor drive; 1 16" by 36" Mill with 40 H.P. Reduction Drive and Motor. Miscellaneous: Compressors; Hoists; Laboratory Equipment; Dings Magnetic Pulleys; Scales; Trucks; Tire Builders, etc. Send for detailed circular. REPRESENTATIVE ON PREMISES. ARRANGE FOR INSPECTION. PRICED LOW FOR QUICK DISPOSAL. CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y. Barclay 7-0600.

IN STOCK FOR SALE: 11 HYDRAULIC PRESSES, WATSON-Stillman, Farrel, Burroughs, 18 by 18", 12 by 12", 12 by 16", 8" Rams; Rubber Mill; Hydraulic Pumps; 5 Boomer & Boschert Hydraulic Presses, 200-Tons and 140-Tons; Kent Cage Mills, 24", belt driven; Ball & Jewell Rotary Cutters; Closed Kiers, 10' by 15'; 250-Gals. Steam Jacketed Kettles with Agitators. R. GELB & SONS, 214 Livingston St., Newark, N. J.

Editor's Book Table

NEW PUBLICATIONS

"Retarder W. Laboratory Report No. 196." E. I. du Pont de Nemours & Co., Inc., Rubber Chemicals Division, Wilmington, Del. This booklet supplies authoritative data for the chemist and technologist for the profitable use of Retarder W, a new ingredient for use with the proper accelerators which are indicated to obtain practically foolproof processing at temperatures up to 227° F., and to obtain stocks which will not set-up in storage at temperatures as high as 120° F. for a considerable period of time. Formulae and data are given showing the effect of Retarder W in typical rubber mixings.

"Draft British Standard Methods for the Analysis and Testing of Latex and Rubber." This mimeographed proposal (48 pages and 88 figures) has been prepared by the British Standards Institute at the request of the Research Association of British Rubber Manufacturers and is now being circulated for comment. Copies of the proposal may be obtained from the American Standards Association, 29 West 39th St., New York, N. Y. The proposal includes sections on analysis and testing of latex, methods of chemical analysis of rubber, methods of testing soft vulcanized rubber, and methods of testing hard rubber.

"Falk Right-Angle Speed Reducers." Bulletin No. 2,100. The Falk Corp., Milwaukee, Wis. This 60-page bulletin describes in detail the Falk right-angle speed reducers, both horizontal and vertical types. The units are all rated according to the "recommended practice" of the American Gear Manufacturers Association. Complete directions for selecting a standard unit to meet the majority of power transmission applications are included, together with specifications and dimensions. The units described cover a ratio range from 1.5:1 to 518:1 and ratings of one to 1,200 h.p. at 100 r.p.m.

"Operators Handbook." 1936 Edition. The B. F. Goodrich Co., Akron, O. This edition contains even more statistical information than previous annual volumes on every type of tire and tube of the company's manufacture. Valuable information for tire users is contained in the discussions on "Why Tires Fail," and "Factors Governing Proper Tire Selection," also the tabulated tire data on inflation, load analysis, cost per mile, etc. A table of weights and measures is given, listing practically all commodities.

"Gastex Folder." General Atlas Carbon Co., 60 Wall St., New York, N. Y. In this issue the conflicting claims are discussed as to whom should be credited for devising the first tubing machine used in the rubber industry. Of the various claimants credit is assigned to John Prior by E. A. Cabona.

"Witco Products, Chemicals, Oils, Pigments." Wishnick-Tumpeer, Inc., 295 Madison Ave., New York, N. Y. This booklet presents in convenient reference form complete data on more than 50 of the various products manufactured and sold by Wishnick-Tumpeer, Inc. Technical information, specifications, properties, applications, and commercial information are covered. The booklet is indexed by consuming industries served by Witco, and the products are divided into seven major industrial classifications: chemicals for rubber, paint, varnish, and lacquer; printing inks; paper; ceramics; leather; drugs; and cosmetics. Copies are available for distribution to interested parties in the trade and may be obtained by writing to the company.

"Falk Herringbone Speed Reducers." The Falk Corp., Milwaukee, Wis. This new 56-page bulletin describes in detail parallel shaft speed reducers with both sleeve and roller bearings, rated according to the "recommended practice" of the American Gear Manufacturers Association. The data is complete in every detail: specifications, ratings, service factors and directions for selecting, dimensions, and applications. Fifty-two different sizes in capacities from one to 1,000 h.p. at 100 r.p.m., with 45 different standard ratios, are covered.

"Goodrich Load and Inflation Pressure Table for Trucks and Buses." The B. F. Goodrich Co., Akron, O. In addition to inflation pressures a load and service diagram is given illustrating the effect of overloading on the ultimate service of a pneumatic tire.

"TAG Pyrometers." Catalog No. 1101B. C. J. Tagliabue Mfg. Co., Park and Nostrand Aves., Brooklyn, N. Y. This 16-page catalog details the features of the TAG indicating, recording, and controlling pyrometers which utilize a beam of light, a mirror galvanometer, and a photo-tube. Their construction offers instantaneous action, 0.1% accuracy, and high sensitivity. Large interior illustrations of the various models are clearly marked and thus provide a quick understanding of the operation.

(*Continued on page* 84)

BOOK REVIEWS

"The Chemists' Year Book for 1936." Eighteenth Edition. Founded by F. W. Atack, Edited by E. Hope. Sherratt & Hughes, 34 Cross St., Manchester, England. Chemical Publishing Co. of N. Y., 148 Lafayette St., New York, N. Y., exclusive agents for North and South America. Cloth, 1,257 pages, 4¼ by 6¼ inches. Indexed. Price $6.

This handbook is practically a full reference library of chemistry and technology with tabulated data on properties, methods of analysis, logrithmic tables, etc. In short this eighteenth edition has been thoroughly revised and includes much new material on "General Properties of Inorganic and Organic Compounds," "Essential Oils," "Tanning Materials," "Leather Analysis," "Dairy Products," and "Alkaloids;" and a new section on "The Analysis of Sulphuric Acid Treated Oils, Alcohols and Wetting Agents."

"Boiler Feed Water Treatment." By F. J. Matthews. Chemical Publishing Co., 148 Lafayette St., New York, N. Y. 1936. Cloth, 526 pages. 5½ by 8¾ inches. Indexed. Illustrated. Price $5.

This book not only covers the well-established processes of water softening and the usual methods of control, but gives also a clear and comprehensive account of the newer methods of treating boiler feed waters which have been developed during the past ten years. The author discusses the subject under the following divisions: Natural Water Supplies, Scale Formation, Corrosion, Foaming and Priming, Analysis and Routine Testing. The appendix gives details to prepare standard solutions of reagents, Clark's table of hardness, a table of chemical factors.

"Annual Survey of American Chemistry." Vol. X. 1935. Edited by Clarence J. West. Published for the National Research Council by Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y. 1935. Cloth, 487 pages, 5½ by 8½ inches. Indexed. Price $5.

With this volume the Annual Survey completes the first decade of its existence, the ten volumes covering the period 1925 to 1935, inclusive. During this time an endeavor has been made to cover, as completely as possible, the progress made in American chemistry and to indicate the trends in the various fields of pure and applied chemistry in the United States.

Of the 25 chapters this year 12 are devoted to industrial topics. This is the same as last year, although the subjects covered are quite different.

(*Continued on page* 84)

RUBBER BIBLIOGRAPHY

BACTERIAL DECOMPOSITION OF THE RUBBER IN HEVEA LATEX. D. Spence and C. B. Van Niel, *Ind. Eng. Chem.*, July, 1936, pp. 847-50.

SNAGS ENCOUNTERED IN LATEX DIPPING. H. Barron, *Rubber Age (London)*, July, 1936, pp. 147-51.

DER PLANTAGENKAUTSCHUK IN BRITISCH MALAYA. A. Schulz, *Veröff. Inst. Meeresk. Univ. Berl.*, 96 pages. (Berlin: Instituts für Meereskunde, 1936.)

RUBBER AND HIGH SHADE. H. W. R. Bertrand, *Trop. Agric., Ceylon*, 86, pp. 139-44 (1936).

OIDIUM LEAF DISEASE OF RUBBER AND ITS CONTROL BY SULPHUR DUSTING. E. Guest, *Planter, Malaya*, 17, pp. 27-30 (1936).

DETERMINING THE ADDITION OF SULPHUR IN RUBBER MIXES. *Gummi-Ztg.*, June 12, pp. 599-600; June 19, pp. 623-24; and June 26, 1936, pp. 649-50.

1886-1936: DEVELOPMENT OF THE RUBBER INDUSTRY AS REFLECTED IN THE *Gummi-Zeitung*. *Gummi-Ztg.*, June 5, p. 575.

RED SULPHURETS OF ANTIMONY. Industrial Characteristics of the Products. J. Garach, *Caoutchouc & gutta-percha*, June 15, 1936, pp. 17557-59.

EVOLUTION OF THE RUBBER INDUSTRY. J. C. Bongrand, *Rev. gén. caoutchouc*, May, 1936, pp. 13-18. (Conclusion.)

LATEX. Living Substance. Dr. Morisse, *Rev. gén. caoutchouc*, May, 1936, 19-23.

THE VISCOSITY PROPERTIES OF RUBBER SOLUTIONS. W. Philipoff, *Kautschuk*, June, 1936, pp. 102-105.

FACILITATION OF THE INCORPORATION OF FILLERS IN RUBBER MIXES. W. Esch, *Kautschuk*, June, 1936, pp. 106-11.

MACHINES FOR THE MANUFACTURE OF CABLES. M. Pollmann, *Kautschuk*, June, 1936, pp. 111-15. (To be continued.)

THE PENDULUM AS A SOURCE OF ENERGY FOR PLASTICITY MEASUREMENTS. I. Williams, *Ind. Eng. Chem.* (Anal. Ed.), July 15, 1936, pp. 304-306.

RUSSIAN ARTIFICIAL RUBBER. *Chem.-Ztg.*, 60, 313-17 (1936).

MIXING OF SODIUM-BUTADIENE RUBBERS OF DIFFERENT PLASTICITIES. P. I. Federov, L. E. Smolenskaja, and I. A. Levitin, *Sintet. Kautschuk*, 2, 32-37 (1934).

PROTECTION OF RUBBER AND GASOLINE BY ANTIOXIDANTS. H. W. Elley, *Trans. Electrochem. Soc., Preprint*, 69, 239-55 (1936).

OIL-RESISTING RUBBER. VI. Solvents for the Cold-Vulcanization Process. J. R. Scott, *J. Res. Assoc. Brit. Rubber Manufrs.*, 5, 37-47 (1936).

OIL-RESISTANCE OF RUBBER. III. Viscosity and Molecular Polarization of Rubber Solution. S. Kambara, *J. Soc. Chem. Ind. (Japan)*, 39, 138-40 B (1936).

INFLUENCE OF FILLERS ON LIGHT-AGING OF VULCANIZED RUBBER. Measurement of Absorption of Light-Radiation of Different Wave-Lengths and Their Influence on the Aging. V. Margaritov, *J. Rubber Ind., (U.S.S.R.)*, Jan., 1936.

THE USE OF BENZOLE IN RUBBER COMPOUNDS. *India Rubber J.*, July 11, 1936, pp. 58-59.

X-RAY SPECTROGRAPHY OF POLYMERS AND IN PARTICULAR THOSE HAVING A RUBBER-LIKE EXTENSIBILITY. J. R. Katz, *Rubber Chem. Tech.*, July, 1936, pp. 357-72. Reprinted from *Trans. Faraday Soc.*, Jan., 1936, pp. 77-94.

FORMATION OF HIGH POLYMERS BY CONDENSATION BETWEEN METALLIC POLYSULPHIDES AND DIHALOGENATED HYDROCARBONS AND ETHERS. J. C. Patrick, *Rubber Chem. Tech.*, July, 1936, pp. 372-82. Reprinted from *Trans. Faraday Soc.*, Jan., 1936, pp. 347-57.

CHLOROPRENE SYNTHETIC RUBBER (SOVPRENE). A. L. Klebanskii, L. G. Tzyurikh, and L. M. Dolgopolskii, *Rubber Chem. Tech.*, July, 1936, pp. 383-408. Translated from *Bull. Acad. Sci. (U.S.S.R.)*, June, 1935, p. 189-226.

INVESTIGATION OF THE STRUCTURE OF RUBBER BY MEANS OF ELECTRON DIFFRACTION. K. I. Kruilov, *Rubber Chem. Tech.*, July, 1936, p. 409. Translated from *J. Experimental Theoretical Physics (U.S.S.R.)*, 5, 6, 524-32 (1935).

X-RAY STUDY OF AMORPHOUS RUBBER. G. L. Simard and B. E. Warren, *Rubber Chem. Tech.*, July, 1936, pp. 417-21. Reprinted from *J. Amer. Chem. Soc.*, Mar., 1936, pp. 507-509.

INORGANIC SUBSTANCES WITH RUBBER-LIKE PROPERTIES. K. H. Meyer, *Rubber Chem. Tech.*, July, 1936, pp. 422-25. Reprinted from *Trans. Faraday Soc.*, Jan., 1936, pp. 148-52.

RUBBER SOLVENTS AND SUBSTANCES WHICH LOWER THE VISCOSITY OF RULBER CEMENTS. B. V. Fabritziev, G. N. Buĭko, and E. A. Pakhomova, *Rubber Chem. Tech.*, July, 1936, pp. 428-36. Translated from *Kozhevenno-Obuvanaya Promuishlennost*, Sept., 1935, pp. 514-18.

EFFECT OF ADDITION OF COLLOIDS ON THE COAGULATION OF LATEX. Y. Tanaka, T. Kuwata, and T. Noguchi, *Rubber Chem. Tech.*, July, 1936, pp. 437-43. Translated from *J. Soc. Rubber Ind. (Japan)*, 8, 337-45 (1935).

INTERNAL PROTECTIVE COATINGS FOR LATEX CONTAINERS AND THEIR VALUE IN MINIMIZING DISCOLORATION IN PRESERVED LATEX. E. Rhodes and K. C. Sekar, *Rubber Chem. Tech.*, July, 1936, pp. 486-90. Discussion, p. 491. Reprinted from *J. Rubber Res. Inst. Malaya*, Dec., 1935, pp. 81-89.

RAPID METHOD FOR DETERMINING SULPHUR AND ASH IN RUBBER BY IGNITION OF THE RUBBER IN OXYGEN. B. Kreps, *Rubber Chem. Tech.*, July, 1936, pp. 492-95. Translated from *J. Rubber Ind. (U.S.S.R.)*, July, 1935, pp. 676-79.

SIMPLIFIED EXTRUSION PLASTOMETER FOR UNVULCANIZED RUBBER. J. H. Dillon, *Rubber Chem. Tech.*, July, 1936, pp. 496-501. Reprinted from *Physics*, 7, 2, 73-76.

DETERMINATION OF FREE SULPHUR IN RUBBER CONTAINING MERCAPTOBENZOTHIAZOLE AND TETRAMETHYLTHIURAM DISULPHIDE. E. Kheraskova and E. Korsunskaya, *Rubber Chem. Tech.*, July, 1936, pp. 511-13. Translated from *J. Rubber Ind. (U.S.S.R.)*, Aug., 1935, pp. 749-51.

BOOK REVIEWS

(*Continued from page 82*)

The chapter on rubber by Webster Jones, Carnegie Institute of Technology, reviews chemical progress in that industry in the following order: crude rubber, plasticizers, vulcanization and structure of vulcanized rubber, accelerators, age resisters, control and testing, compounding ingredients, rubber technology, cements and adhesives, reclaiming, hard rubber, latex and rubber dispersions, synthetic rubber and rubber-like products, derivatives of rubber, miscellaneous processes, and patents.

NEW PUBLICATIONS

(*Continued from page 82*)

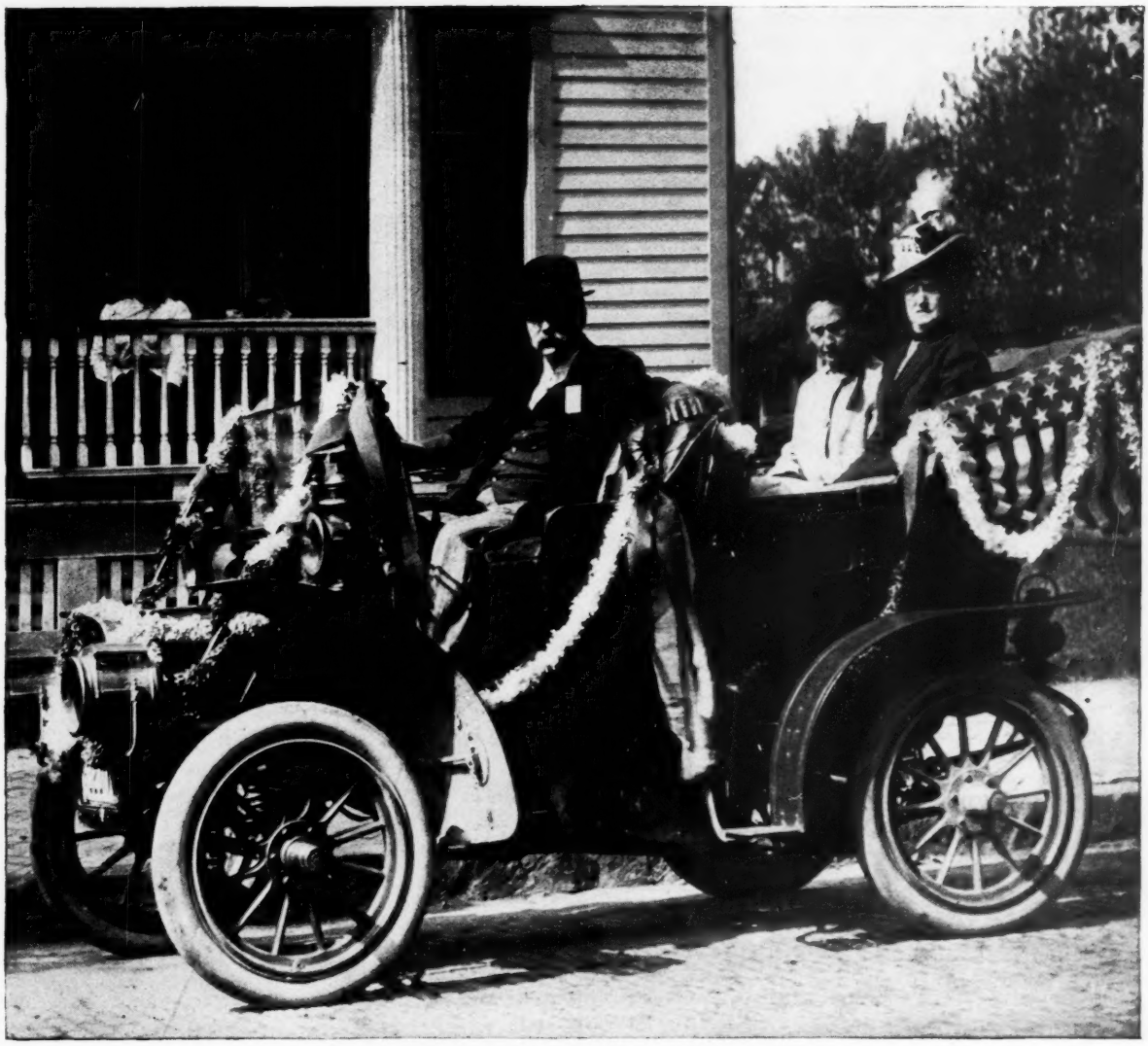
"The Activator." The New Jersey Zinc Co., 160 Front St., New York, N. Y. The June issue of this informative number, paged from 25 to 36, discusses mathematically "Particle Size Measurement and Distribution Curves of Several Types of Zinc Oxide." The article is illustrated with diagrams and graphs. Another article treats of "Zinc Oxide Solubility in Water."

"Photo-Micrographic Equipment." Catalog E.21. Bausch & Lomb Optical Co., Rochester, N. Y. This is a complete descriptive and illustrated pamphlet of great interest and value to those engaged in photo-micrographic research. It is accompanied by a supplement of prices and specifications.

"Pneumatic Equipment for Horse Drawn Vehicles." By Alexander Hay. Rubber and Agriculture Series, Bulletin No. 2. June, 1936. The Rubber Growers' Association, Inc., 19 Fenchurch St., London, E.C.3, England. This 20-page pamphlet illustrates and describes the application of pneumatic tires to the various types of farm vehicles and city carts in Great Britain and discusses their advantage.

"Lenses, Prisms, Mirrors." Catalog D-10. Bausch & Lomb Optical Co., Rochester, N. Y. This 20-page pamphlet illustrates, describes, and records the critical data and prices of every standard optical part made by the company. An ample index is provided.

"Taxation of the Rubber Industry in Malaya." Supplement to the Bulletin of the Rubber Growers' Association, Inc., 19 Fenchurch St., London, E.C.3, England. Copies are given of the official correspondence and reports during the past 18 months in which the association contends with the Secretary of State for the Colonies, the Governor, and High Commissioner of Singapore for the reduction of taxes on the rubber producers of Malaya, which, the association submits, are excessive, seriously impair Malaya's competitive power, and are unjustified by the budgetary needs of the country.



"WHOA!"

DAD looks very calm, sitting there having his picture taken, but when he gets the contraption started he'll be all attention. He *must* remember to apply the brake instead of pulling on the wheel and shouting "whoa!"

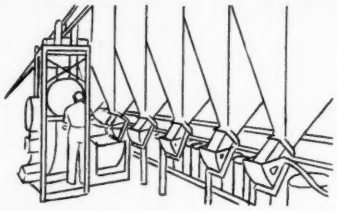
We can smile now, but Dad typifies the spirit of his time and *our* time. Progressive, ready to tackle new things. This suggests the history of The Philadelphia Rubber Works Company and gives a hint for the future.

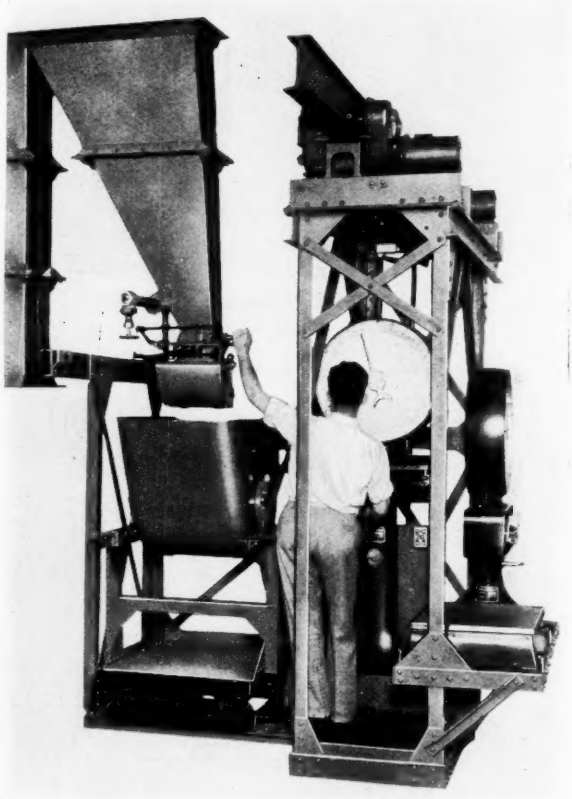
When this picture was exposed on a slow, old-fashioned glass plate Philadelphia Rubber Works was some 20 years old. For a time it had been the whole industry of rubber reclaiming by chemical processes. Then competitors began to appear—and nothing tests the soundness of a company's spirit and methods like a little competition. Philadelphia had to prove it could not only start something new but could carry it on with increased benefit to the world.

Were we living in the past then—because we were old and others were new? Some companies were. But our people knew then, as we know now, that *today's* test is the only one that counts. That's why we're *now* so alert to meet *your* tests, any you wish to apply. Product, research, service—talk about these things in the industry and you hear Philadelphia referred to as a live, progressive organization. We're not resting on old laurels; we're planning to be here for the *next* 50 years. The Philadelphia Rubber Works Company, Akron, Ohio.

PHILADELPHIA RECLAIMS

The RICHARDSON
MODERN COMPOUNDING SYSTEM





Bins . . . Control Gates . . . Dump Bucket . . . Scales . . . Tram Cars

Today's newest and most efficient system for loading, weighing and conveying all materials from storage bins to Banbury mixer.

BINS, CHUTES and CONTROL GATES. Finest materials, will not choke or clog. Flow uniformly. Instantaneous cutoff. No flushing. Absolutely leakproof.

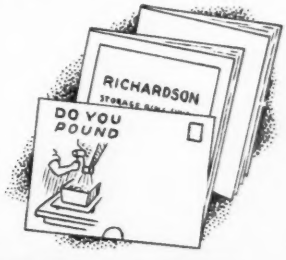
EASE of OPERATION of control gate makes possible accurate proportioning to the ounce. No check weighing necessary.

MOVABLE TRAM CAR is electrically controlled under various bins to mixer.

A Typical Installation

REDUCES LABOR COST 50%
. . . SAVES ⅓ FLOOR SPACE
. . . GUARANTEES EFFICIENT COMPOUNDING

RICHARDSON COMPOUNDING SYSTEMS pay enormous dividends in labor saving and more economical compounding. Our engineering department would welcome the opportunity of proving this to you.



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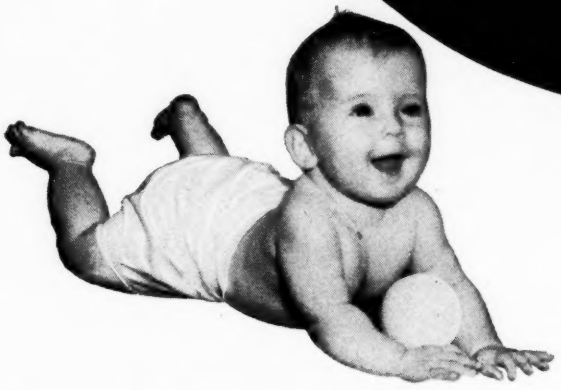
The various units of the RICHARDSON COMPOUNDING SYSTEM are illustrated and described in various booklets. We shall be glad to forward these upon request.

RICHARDSON SCALE Company
CLIFTON, N.J.



BRIGHT AND LIVELY!

WHETHER you are producing compounds for baby pants, raincoats, sheeting or other lightweight stocks, you can always depend on Titanox-C to impart exceptional whiteness and brightness.

This modern white pigment not only possesses remarkable tinting power, but is also unusually low in specific gravity. The latter advantage makes Titanox-C decidedly economical to use.

Other advantages are fine particle size, ready dispersability, and chemical stability. Titanox-C does not react with sulphur, sulphur compounds and the many accelerators used in rubber compounding. Our organization is ready to assist you in any way possible. Just write or telephone our nearest office.

TITANOX

TITANIUM PIGMENT COMPANY, INC.

Manufacturers of

TITANOX-C (Titanium Calcium Pigment) TITANOX-A (Titanium Dioxide)
TITANOX-B (Titanium Barium Pigment) TITANOX-L (Lead Titanate)

111 Broadway, New York, N. Y.; Carondelet Station, St. Louis, Mo.; National Lead Co. (Pacific Coast Branch), 2240 24th St., San Francisco, Calif.; Canadian Distributors: Wilson, Paterson, Gifford (1935), Ltd., 3552 St. Patrick St., Montreal; 132 St. Helen's Avenue, Toronto.

QUALITY is *the* important thing in rubber chemicals, of course. But assurance of uniformity and a prompt, efficient delivery service from your source of supply is important too. These are features that help you keep your production schedules running smoothly. Cyanamid is cooperative along these lines—systematically so! Our production is rigidly controlled to meet the highest requirements for quality and uniformity. Our plants and warehouses are located at the most conveniently located shipping points. Look to Cyanamid to give you dependable materials—plus the kind of service you really want.

AERO BRAND RUBBER CHEMICALS

D P G • D O T G

RUBBER SULPHUR

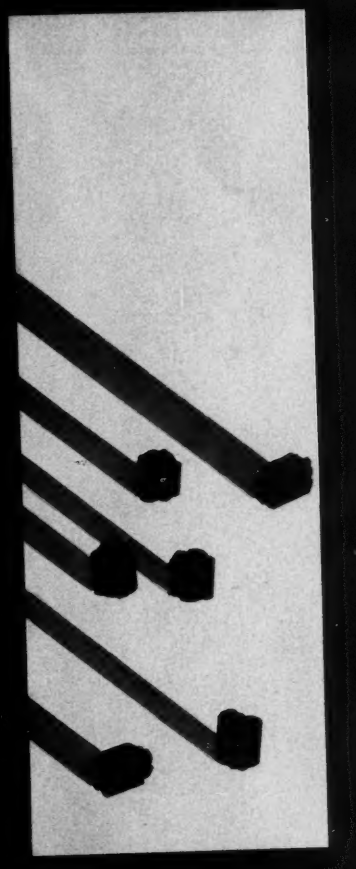
ACCELERATOR 49

AERO BRAND RUBBER CHEMICALS are manufactured at Warners, N. J. Warehouse stocks at Boston, Mass.; Trenton, N. J.; Detroit, Mich.; Chicago, Ill.; Akron, Ohio; Los Angeles, Cal.

SALES REPRESENTATIVES TO THE RUBBER INDUSTRY
Ernest Jacoby & Company, Boston, Mass.; H. M. Royal, Inc., Trenton, N. J. and Los Angeles, Cal.; Herron & Meyer, Chicago, Ill.; Akron Chemical Co., Akron, Ohio

AMERICAN CYANAMID & CHEMICAL CORPORATION

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.



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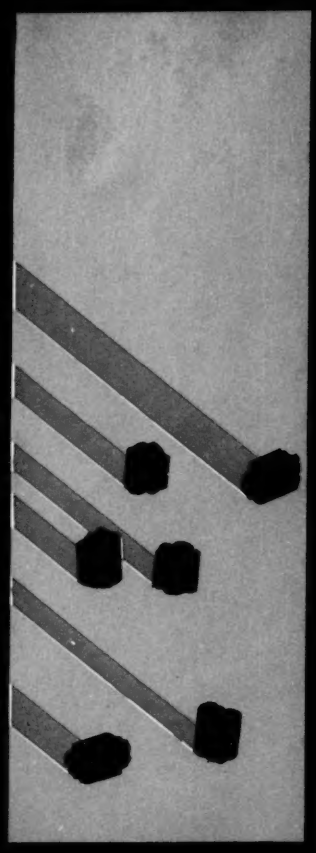
DIXIEDENSED 66 ·· KOSMOBILE 66



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Introducing

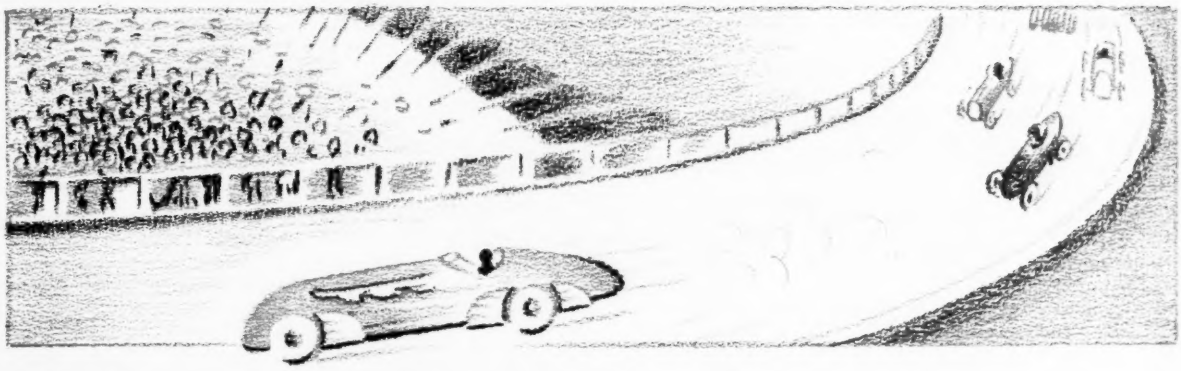
KOSMOBILE 66 · · DIXIEDENSED 66

DUSTLESS CARBON GAS BLACKS IN A NEW FORM

UNITED CARBON COMPANY

CHARLESTON, W. VA.

In Front . . .



With the Best in Acceleration

"EL-SIXTY"

Other products for the rubber industry include:

PERFLECTOL
UREKA C
UREKA BLEND B
GUANTAL
OXYNONE
DPG
A-32

• USE this new accelerator for high clay stocks — mechanicals — soles and heels — reclaim stocks — tires and tubes.

See our representative or write for "El-Sixty Tests."

CHEMICALS OF QUALITY
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Monsanto Chemical Company
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Starting the Last Half

A major change has taken place. The momentum which business has developed is powerful — industrial activity in all branches is well sustained, prices are firm and rising.

Crude prices are up—may go higher.

RECLAIMS have had only fractional increases and many standard grades can be purchased at no increase over a year ago.

RECLAIMS are economical in the fabrication of nearly all rubber articles, with a tremendous advantage over crude in processing, supplying the full rubber content with one-half the mixing and power cost.

The present ratio of Reclaimed to Crude gives the alert chemist a tremendous advantage on Compound costs.

Fall months are ear-marked for activity.

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Our Service will please you—Our Quality will satisfy.

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KAYSAM

A REVOLUTIONARY PROCESS FOR THE MANUFACTURE OF RUBBER PRODUCTS

The Kaysam Process is a casting method of manufacturing all types of solid and hollow rubber articles directly from latex by simply pouring a liquid mix into a desired form and setting the material to a solid, removing from the form, drying it by accelerated methods, and vulcanizing to procure a finished rubber article.

Fundamentally it is the natural way to produce a rubber article, for instead of coagulating the latex and drying it to produce crude rubber, then breaking the rubber down by mastication and endeavoring to bring back many of the natural physical properties of the rubber by vulcanization, the Kaysam Process merely casts, dries, and vulcanizes the liquid latex to which have been added the necessary compounding ingredients to procure the desired physical properties.

Thus, superior physical properties, including better ageing characteristics and tensiles over 5,500 lbs. per sq. in. may be obtained.

Due to the simplicity of the process, new rubber products can be manufactured that are not practical by conventional methods.

It offers the following advantages over conventional rubber manufacturing methods:

1. No breakdown of the rubber.
2. No heavy machinery, including mills, calenders and presses necessary.
3. 80% less capital equipment.
4. Readily adaptable to automatic equipment.
5. More versatile in production methods.
6. Considerably lower production costs.
7. Superior physical properties.
8. New products previously impractical can be manufactured.

An adequately equipped laboratory is being maintained at the RUBBER-GEL PRODUCTS CORPORATION, North Quincy, Massachusetts, functioning as a servicing unit for licensees of the process in the application of Kaysam to specific problems and products which are presented.

Inquiries are solicited.

KAYSAM CORPORATION OF AMERICA

One East 57th Street, New York, N. Y. **ROOM 704**

PRODUCTS MADE BY THE KAYSAM PROCESS

400-500-600-1000 FEET A MINUTE

WHAT?

WIRE CURED ON THE FLY . . .

If you are interested in continuous cure of rubber covered wire—and many companies are—use

"ZENITE" Combinations

For these reasons:

(1) Economy
(2) Processing control
(3) Conformity with all normal electrical requirements
(4) Excellent aging

If the best possible aging at normal temperatures is desired, use—"NEOZONE A." (You will remember "Neozone A" doesn't bloom up to 5% on the rubber.)

If heat aging is important, use—**"AKROFLEX C."**

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Our wire experts await your command.

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